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Abstract Proceedings

Abalos, Lori

Institution: *TX - Texas Woman's University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Lori Abalos,
Sonia Juarez,
Robby Petros

Abstract Name: **Synthesis and Characterization of a Doxorubicin-Human Serum Albumin Drug Conjugate Via Traceless Cobalt Coordination Chemistry**

The use of nanotechnology-based drug delivery systems in the context of cancer treatments has the potential to help target drug chemotherapeutics to tumor cells more precisely while simultaneously reducing off-target toxicity. One of the most prescribed chemotherapeutics, doxorubicin, is an anthracyclines drug that is effective in treating cancer; however, the drug exhibits dose-limiting cardiotoxicity. Dox intercalates DNA, resulting in the deterioration of DNA strands and the ultimate inhibition of DNA and RNA synthesis. Doxorubicin's chemical structure contains a primary amine group that can be used to crosslink it to a protein. This project focuses on using cobalt coordination chemistry as a novel crosslinking strategy to synthesize conjugates of Dox bound to human serum albumin (HSA). The synthesis of conjugates of DOX with HSA will be discussed along with methods for characterization via HPLC that allow the number of Dox molecules bound per protein molecule to be determined.

Abamecha, Blen

Institution: *CO - University of Colorado at Boulder*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Blen Abamecha

Abstract Name: **America's Black Maternal Mortality Rate**

Being that standard medical practice and practitioners are prone to dismiss the role of social determinants that contribute to an individual's state of health, Black women are at a particular disadvantage when seeking any sort of medical treatment. The lack of representation of Black women in the medical field is an overlooked pitfall of the medical community. Specifically, medical textbooks and medical school training cater more to the care of non Black patients. Textbooks and training focus more on white anatomy which leads to the exclusion of other minority groups including Black women and causes increased levels of discrimintation and mistreatment in their pre and postnatal care. Historically, the majority of leadership roles in the medical profession are fulfilled by white males. Issues then arise in effectively treating patients of all demographics, when the only reference physicians have to base treatment plans on is white patients. Furthermore, the health equality among Black women in hospital settings in the United States is statistically appalling. Systemic racism is compromising the health of Black women. Due to the lack of race and gender representation in the medical field, the racial bias health practitioners have towards Black women causes racial health disparities that have negative long term effects on the mother giving birth or her newborn. The purpose of this research paper is to bring light to the power imbalance that Black women face in these environments at such a vulnerable and life changing time. These inequalities are a reflection of our social and economic progress today. There is currently inadequate research on this topic which is evident in the continuous neglect that Black women still face in U.S. hospitals.

Abbajabal, Roba

Institution: *IA - Iowa State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Roba Abbajabal

Abstract Name: **Counting Co-cultured Cells with Convolutional Neural Networks**

Recent developments in convolutional neural networks (CNNs) have produced significant advances in image analysis applications. By automating the feature-learning process during image analysis, CNN models can minimize development time to create results more efficiently. CNNs have been prominently used for regression tasks, such as calculating the distance, size, or count of objects. In this paper, we discuss the utilization of CNN models in cell counting algorithms, with specimens that have been collected and digitized using fluorescence microscopy. We present this in the collection of two types of biological cells: astrocytes and adult hippocampal progenitor cells (AHPCs).Astrocytes and AHPCs are two distinct types of cells that are found in the central nervous system. Astrocytes are star-shaped glial cells that have the major purpose of maintaining brain homeostasis and neuronal metabolism. Meanwhile, AHPCs have the task of proliferating and differentiating into new specialized cells like astrocytes. Cellular differentiation is a process in which stem and progenitor cells can divide into new specialized cells with distinct functions. Both cell types could be visualized using DAPI staining, which is a nuclear stain commonly used for quantifying the total number of cells present in an image. This research aims to create a CNN model that can quantify the number of astrocytes and AHPCs in an image.Unlike the traditional, restricted approach of using CNN models to count all cells in an image, we have developed a solution that can predict the number of cells of a specified type. The motivation for this was to be able to work with image datasets that contain multiple types of cells. We have named it CellCounter, a CNN model which can enumerate the amount of both astrocytes and AHPCs by using multi-output regression. The model's accuracy and speed make it ideal for counting tasks.

Abdrabbo, Aya

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Courtney Westlund,
Bart Dahl,
Aya Abdrabbo

Abstract Name: **Three-State Biaryl Lactone Molecular Switches with Amine donors**

Our research is focused on the synthesis of four bridged biphenyl molecules with amine donors.These three-state biphenyl molecules, due to their chemical properties, will find applications as nanoscale fluorescent sensors and molecular mechanical devices. Biphenyl molecules have known dihedral angles, leading to differing optical and conducting properties when manipulated. By using a lactone-bridge we can force the molecule into and out of planarity; at low pH the molecule takes a planar conformation ("ON"), while at high pH it's non-planar ("OFF"). Research from previous groupshas shown similar two-state molecules' effectiveness at readily switching conformations when exposed to different chemical environments. We are researching the addition of diethylamine and diphenylamine donor groups. By combining cyano and nitro acceptors used previously and differing amino donors within biphenyl molecules, we can enhance optical properties and pH sensitivity. This pH sensitivity will be more precise with the addition of a third "OFF" of the molecule. At low pH, the amino group should become protonated, leading to the second "OFF" state and giving the molecule a narrow "ON" state. The "ON" state would result in visible color differences than the "OFF" state of the molecule. These characteristics would improve the usefulness of these molecules as pH sensors. We have successfully synthesized two of our target molecules, one molecule is a cyano acceptor group with diethylamine donor group and the other is a nitro acceptor group and diethylamine donor group. We will be continuing this work to synthesize the other two molecular switches.

Abebe, SeArre

Institution: ***IN - Purdue University Main Campus***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
SeArre Abebe

Abstract Name: Design and Evaluation of a novel binder protein for SARS-CoV-2 using the game Foldit

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus causing COVID-19, infects human cells when the receptor binding domain (RBD) of the viral spike protein binds to the human angiotensin converting enzyme 2 (ACE2). Monoclonal antibodies targeting the spike protein have been shown to block RBD-ACE2 interaction effectively and have been used for the treatment of COVID-19; however, antibodies cannot be delivered intranasally to treat early stages of infection due to their large molecular size and instability. Therefore, there is a need for small proteins that can bind with high affinity to the spike and prevent its interaction with ACE2. De novo protein design using current automated methods is difficult due to the exponential number of possible structures that would need to be searched and the imperfect prediction of a protein's native conformation. The online citizen science game Foldit provides a potential solution to these challenges by combining human spatial reasoning skills with the Rosetta algorithm into an effective platform for protein design. Here, we present a novel SARS-CoV-2 binder protein that was designed using Foldit. Three metrics were used to evaluate the proposed protein's binding affinity with the coronavirus target: ΔΔG, buried unsatisfied polar atoms (BUNS) quantification, and contact surface area. The proposed binder protein consists of 92 residues and uses a three-helix bundle fragment from the ACE2 receptor. Hydrophobic packing and hydrogen bonding were incorporated at the RBD-binder protein interface to optimize target binding. The computer-generated protein provides a candidate for SARS-CoV-2 therapeutics. Laboratory testing will need to determine the folding, stability, and neutralizing capability of the proposed binder protein.

Abel, Allison

Institution: ***IA - Iowa State University***

Discipline: Biology

Author/Contributors:
Allison Abel

Abstract Name: 3D Models as a Tool for Learning Dogfish Shark Anatomy: An Analysis of Student Satisfaction

3D-printed models are being increasingly utilized as learning aids in medical and comparative anatomy education. Evidence that 3D models can significantly improve student accuracy in recognizing important anatomical landmarks and provide a low-cost alternative to more expensive, difficult-to-obtain, or fragile specimens has furthered their prevalence (1, 2). Additionally, 3D models provide a unique interactive experience with structures that may otherwise be difficult to observe in preserved specimens. This is particularly relevant with the chondrocranium and brain of the dogfish shark (Squalus acanthias). The chondrocranium is a cartilaginous structure that can be difficult to dissect and handle, and both brain and chondrocranium are fragile, prone to damage by undergraduate students unfamiliar with proper dissection techniques. This project addresses these issues by developing a novel, interactive-based 3D-printed model that allows students to understand the S. acanthias chondrocranium and brain in situ. The S. acanthias chondrocranium was modeled based on photogrammetry data developed by Thomas et al. (2). The brain was modeled using anatomic texts and preserved specimens as reference. A user study will be conducted in January 2023 to evaluate student satisfaction and perceived utility of these 3D models for learning in the comparative chordate anatomy lab at Iowa State University. Students will respond to survey statements using a 5-point Likert scale and will have an opportunity to provide qualitative long-form responses regarding their experience interacting with the physical models. Results from the survey will be presented in April 2023 and will inform the design process and production of improved 3D models for S. acanthias and other anatomic specimens, and may encourage the use of 3D-printed anatomical models more broadly in other educational settings as the availability of 3D technology increases.

Aberastury, Bautista

Institution: ***FL - Miami Dade College***

Discipline: Mathematics

Author/Contributors:
Bautista Aberastury

Abstract Name: Genetic Codes Represented as Multivariate Data and Visualized as Chernoff Faces

Genetic codes can be thought of as the rules that govern the process carried out inside the living cells to transform genetic information into proteins. To date, there are seventeen mutations of the original genetic code; however, there is scarce information about the causes of these mutations and what the main differences among them are. Attempting to shed some light on this matter, we develop a mathematical model that enables us to represent a genetic code as list of numerical observations that can be used statistical and computational methods as well as to visualize the difference between them. At a primary stage, genetic codes can be mathematically regarded as block-21 partitions of the set of 64 codons. Using this representation as a starting point, we transform genetic codes into multivariable data in the form of vectors in a Euclidean space (i.e., a list of numerical observations) using a metric between codons to conduct the measurement of the determined variables. Such a metric considers both the chemical compositionand thestructure of codons as strings of characters. Our next goal is to use this vectorial representation to visualize the genetic codes in such a way that the differences among them become apparent. However, the number of observed variables (i.e., the dimension of the Euclidean space) is quite large, specifically 264-1. To overcome this issue, we proceed with the execution of a selection of variables method based on testor theory, that enables us to reduce the number of variables to near 10. Finally, we rely on the data visualization method known as Chernoff faces to exhibit genetic codes as human faces. We conclude with an comparative analysis of the similarities and differences among genetic codes and some biological implication derived from it.

Ablove, Jane

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Paul Green,
Ekim Koca ,
Jane Ablove,
Collin Brennan-Carey

Abstract Name: Defining driving performance measures and statistics for on and off road vehicles

This project aims to define the driving terms, measures, and statistics that are often used in vehicular research for on and off road vehicles. In different bodies of transportation research, driving terms are often defined in various ways and are occasionally not defined at all. This can result in making research difficult to compare across studies. Previously, research had been done to define driving performance measures and statistics in the standard J2944 “Operational Definitions of Driving Performance Measures and Statistics”; however, this research did not include off road vehicles. The project first requires an in-depth literature review, finding ways in which studies define driving terms, measures, and statistics. This data is then compiled into the final document, and terms that have not been previously specified are newly defined. The standard will also include diagrams to further clarify definitions of terms, measures, and statistics. This document will make these previously inapplicable studies more comparable and easier to gather information from, organizing different definitions of common terms with distinct titles so that researchers can actively choose which definition to use for their work. With the newly defined driving terms, previously uncorrelated studies have become applicable to one another. This research, when effectively utilized by future studies, will make these studies relatable by having a concrete and accessible set of definitions, and can additionally contribute to future studies comparing on and off road vehicles and vehicle testing.

Abou-Rahma, Janna

Institution: *TN - Middle Tennessee State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Janna Abou-Rahma,
Kevin Bicker

Abstract Name: **Mechanism of Action of Antifungal Peptoids**

Due to the rise of drug resistant strains of fungal pathogens such as Cryptococcus neoformans and Candida albicans, there has been a need to identify new antifungal agents. In comparison to naturally produced antifungal peptides, antifungal peptoids mainly differ in structure, which prevents protease recognition giving higher bioavailability. Previous studies have shown that peptoids are effective fungicides. RMG8-8 and RMG9-11, two peptoids recently discovered in the Bicker Lab, have proven to be effective antifungal agents against C. neoformans and C. albicans, respectively. Reported here will be studies to determine the mechanism of action and other vital therapeutic properties of RMG8-8 and RMG9-11 using various biochemical and microbiological assays. Preliminary results of critical micelle concentration testing indicate that RMG8-8 as well as RMG9-11 do not exist as micelles at their minimum inhibitory concentrations, but rather function unimolecularly. Using a parallel artificial membrane permeability assay, it was found that RMG8-8 is likely unable to penetrate the blood brain barrier. However, RMG9-11 demonstrated good permeability, indicating that it may be able to penetrate the blood brain barrier to treat dangerous neurological infections of fungi. Subsequently, assays will be conducted in order to further understand the mechanism of action of both peptoid compounds to address the rising concern of drug resistant strains of fungal pathogens.

Abu, Shelly Anne

Institution: *CA - University of California - Merced*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Shelly Anne Abu

Abstract Name: **Looking into the Online Representation of Carceral Spaces via "PrisonTok"**

For many decades, the portrayal of prison in entertainment media has been the center of many TV shows, films, and literature. Often these narratives are dramatized, inaccurate, or highly censored. These media forms affect perceptions of formerly or currently incarcerated individuals into being reduced as violent, untrustworthy, and undeserving of a second chance. When the mainstream media is not heavily censored or edited, viewers are able to see the reality of inhumane conditions that take place within the prison industrial complex. When incarcerated communities began to control and contribute to their own representation, former and currently incarcerated individuals showed their lives through their own perspective. The popular social media app 'TikTok' allows these individuals to control their narratives. The app has a growing community of incarcerated creators, which is mainly known as "#PrisonTok". To gain a better understanding of PrisonTok's influence on how formerly or current incarcerated individuals are perceived and affected, an analysis of five users and around fifty videos all together is done. The analysis will be about the aesthetics of a video, engagement of online user interactions, and what the individuals affected by the justice system are trying to communicate. This research demonstrates a reflection of determination, hope, and the need for connection with the aim ofopening and facilitating a dialogue about abolition.

Adams, Dylan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Abbigail Pepka *Dylan Adams* *Jessica Dao*
Carly Gifferson *Alicia Olsen* *Jennifer Schwart,*
Carly Swenson *Ava Quick* *Nicholas Beltz*
Saori Braun

Abstract Name: Impact of Caffeine Combined with Resistance Training on Post-Exercise Arterial Stiffness in Habitual Caffeine Consumers

Background/Purpose: Increased arterial stiffness has been shown as a marker of cardiovascular-related events. Previous research has revealed resistance training and caffeine consumption leads to increases in arterial stiffness independently. Therefore, the purpose of this study was to determine the residual effect of combining resistance training and caffeine on arterial stiffness in resistance trained females. Methods: This experimental study was conducted on 18 participants between the age of 18 and 23 years who were resistance trained in accordance to ACSM resistance training guidelines. All participants were habitual caffeine drinkers as defined by consumption of at least 200 mg/day, 5 days/wk. Pre-trial evaluation of 10-rep max was performed to determine individual training load for each exercise session. Subjects completed both caffeine and placebo conditions in a counterbalance fashion to avoid an order effect. Caffeine was administered during each trial a dose equal to 3 mg/kg body weight. Each condition was followed by an exercise intervention consisting of a full-body superset resistance training protocol. Measurements of arterial stiffness (pulse wave velocity, pulse wave analysis, and pulse pressure) were obtained using the SphygmoCor® system at 4 different time points (baseline, post-exercis, 10min post-, 20min post-, and 40min post-exercise). Results: A two-way repeated measure analysis of variance (within-subjects) did not indicate a significant difference in measurements of arterial stiffness between placebo and caffeine trials, but a time effect was revealed to be significant within both trials ($p = 0.008$). Conclusion: The results did not indicate a summative increase in measurements of arterial stiffness due to the combination of resistance training and caffeine consumption.

Adams, Lori

Institution: ***IA - Iowa State University***

Discipline: FAN Abstract

Author/Contributors:
Lori Adams ,
LeAnn Faidley

Abstract Name: Virtual (and Hybrid) Summer Experience for Early Research (VSEER) Program: A Pandemic Collaboration to Broaden Participation

The VSEER program (Virtual and hybrid Summer Experience for Early Researchers),was first offered in summer 2020 in response to the pandemic. VSEER is acollaborative effortover several years, was developed and implemented by a team of campus directors across institutions in Iowa, Illinois, and Nebraska, and was adapted each summer to address the needs of students and objectives of the IINSPIRE LSAMP Alliance www.iinspirelsamp.org.The goals of the VSEER program are to provide early research training for studentsin a flexible environment across two and four year institutions, provide exposure to a variety of research approaches across disciplines, and create an environment where research may be understood in the context of culture. VSEER also aims to build community among program participants and mentors, develop participant STEM identity in the context of student intersectionality, and deepen student understanding of the purpose of LSAMP. The program is intended to increase the number of students from underrepresented minority groups that enter and thrive in STEM research fields.VSEER is an 8-week program in which students receive stipends for participating in an array of required and optional program activities. The core program consists of three components: an Introduction to Research course, lab tours, and community building. The core components are led by campus leaders and delivered synchronously via Zoom. The Introduction to Research course is delivered through Canvas Learning Management System. All students write a reflection and present a poster at the end of the program. Students have the option to be paired with a research mentor and engage in a research experience for an additional stipend. Students take pre and post STEM identity development surveys, receive a personal profile from the survey, and discuss the profiles with researchers.

Adams, Rebecca

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Rebecca Adams

Abstract Name: **Continued Studies of the Medium Effects on the Structures of Pyridine-Silicon Tetrafluoride Complexes**

We suspect that pyridine-silicon tetrafluoride complexes will exhibit structural changes in response to their surrounding environments, specifically, that the N-Si bond distance will contract in response to chemical medium. This study explores these structural changes caused by fluorine substitution on the pyridine and subsequently, solvation in low-temperature solid samples of inert gases (nitrogen, argon, and neon). These structural changes will be assessed through theoretical models of the bonding and experimental low-temperature IR spectroscopy. The models provide detailed structural information (e.g, precise N-Si bond distances), in addition to bond vibrational frequencies, bond energies, and bond potential energy curves. The low-temperature IR spectra provide measured values of key bond frequencies that correlate to structure in the inert media. Previous research was inconclusive because the models used were deficient and the extent of the medium effects were unclear. Now, we are reevaluating the structural results of C6H5N-SiF4, 3-FC6H5N-SiF4, 3,5-FC6H5N-SiF4, and 3,4,5-FC6H5N-SiF4 with a more sophisticated series of models. Interestinglywe have found that results are very sensitive to model choice, which highlights the need for experimental data on these systems. In turn, the predicted frequencies from the model results will be compared to infrared spectra from solid neon and solid argon. These comparisons convey the extent of structural change between the gas phase and the inert environments. Currently, experiments are in progress for 3,4,5-FC6H5N-SiF4 and these data will be discussed as well. in addition, we are mapping the N-Si bond potentials of these systems in the gas phase and in low-dielectric media. Comparisons of these data provide mechanistic insight into the observed and predicted structural changes.

Adamson, Hannah

Institution: *VA - George Mason University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Hannah Adamson

Abstract Name: **Beyond a binary: Investigating criteria of insiderness in peacebuilding**

Peace building efforts around the world often struggle to achieve their aims, yet alone become self-sustaining initiatives that maintain societies transformed from cycles of conflict. These struggles may be related to the limited investigation, understanding, and support of insiders working to affect peace within their own communities. While existing literature has begun investigation of the unique roles of insider peace builders, there has not yet been sufficient theoretical analysis to understand the nuances of insider dynamics as a spectrum. Addressing this gap, this research project explores a) which criteria determine an individual's “insiderness” within conflict contexts and b) how these insider criteria interact with conflict dynamics to contribute towards peacebuilding practices. Through open-coding and thematic analysis of 14 sources addressing the nexus of “insider” and “peacebuilding”, two key areas of findings were identified: a) criteria of insiderness (e.g. trust with communities, geographical association, traditional knowledge or customs, etc.) and b) the abilities needed to utilize this insiderness for peacebuilding processes (e.g. maintaining trust, improving information flows, integrating traditional practices, cultivating peer networks, etc.). Identifying and evaluating these criteria can enable practitioners to better understand their roles in a peacebuilding process and their proximity to the conflict can be mapped according to salient criteria of insiderness in their specific context. Ultimately, this increased awareness of insiderness dynamics can contribute to more effective peacebuilding practices which champion local agency, overcome shortfalls of existing peacebuilding frameworks, and foster sustainable conflict transformation.

Addai, Jessica

Institution: ***OK - University of Central Oklahoma***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Jessica Addai

Abstract Name: Marginalization, Intersectionality, and Oklahoma Medical Cannabis Patients: An Exploratory Focus Group Study

In 37 states, cannabis' status as an illegal drug has shifted due to the process of medicalization. Oklahoma's medical cannabis program (OMMA) has gained national recognition as the only state with no qualifying conditions required to obtain a medical cannabis license. Oklahomans must receive discretion from one recommending physician who "certifies" that their medical condition(s) "qualify" for participation in the state's medical cannabis program. After obtaining OMMA patient status, patients must self-prescribe and rely on their lived bodily experiences as they access thousands of Oklahoma licensed cannabis dispensaries with little to no guidance of cannabis medicines. National health agencies recognize Oklahoma's particularly medically vulnerable socio-demographic profile, yet only one quantitative survey has accounted for socio-demographics of OMMA patients. In the last four years, there have only been two focus group studies exclusively for registered cannabis patients. Remarkably, no one has conducted a focus group study with registered medical cannabis patients to investigate the experiences of Oklahoma patients' with intersecting identities. Oklahoma's distinctive environment warrants the use of an intersectional, qualitative methodology. As such, the goal of this focus group study is to explore the interconnectedness of race, ethnicity, class, gender, and sexual orientation of Oklahoma patients. Particularly, the ways in which they navigate and/or negotiate their status as patient and a member of a historically marginalized community. The findings of this semi-structured exploratory study provide insight about Oklahoma's medical cannabis landscape, intersectional minority stress, and the perceptions of registered cannabis patients holding intersecting identities.

Adebayo, Thuwebat

Institution: ***IL - Northern Illinois University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Thuwebat Adebayo,
Elzbieta Iwaniuk,
Irina Nesterova

Abstract Name: DNA G-quadrupexes for Visual Signal Readouts in Bioanalysis

Nucleic acid scaffolds can fold into catalytically active conformations known as DNAzymes. Thus, DNA G-quadruplexes are notorious for enhancing the catalytic activity of hemin. The ability of nucleic acids to change conformation into the catalytically active form upon a target recognition has been engineered into a range of molecular diagnostic platforms. In this research project, we develop a system for visual signal transduction in biomarker detection. The new detection platform is based on an artificial activatable catalase enzyme. It is based on an oligonucleotide scaffold that binds and activates hemin to catalyse the decomposition of hydrogen peroxide. Hydrogen peroxide decomposition yields oxygen that is released in the form of bubbles. Bubbles can be detected either through the naked eye or under a microscope. When done by the naked eye, which is the visualization technique used in this project, it is a straightforward and easy-to-interpret route towards instrument-free visualization, and no scientific training is required. Thus, we work to develop an inexpensive and instrument-free platform for detecting clinically meaningful biomarkers such as antibodies and nucleic acids. The catalytic system consists of oligonucleotides that fold into G-quadruplex structure. G-quadruplexes are nucleic acid tetraplexes consisting of guanine-rich sequences. We will develop a scheme where a biomarker detection event results in folding of G-quadruplex into an active enzyme conformation.

Adedeji, Adebayo

Institution: ***GHA - Ashesi University***

Discipline: **Economics**

Author/Contributors:
Adebayo Adedeji,
Esther Laryea

Abstract Name: **The African Cost of Sustainability: Impact of Environmental, Social, and Governance (ESG) performance on sovereign risk in Africa**

Africa may be on the cusp of a seismic sovereign debt crisis as sovereign debt burdens skyrocket across the continent. In 2021, more than 20 low-income African countries were in debt distress as their prices plummeted and yields ballooned. Consequently, subsequent sovereign African debt issuances—particularly in the international capital markets—will have to offer higher yields to compensate investors for their higher risk profile. Unfortunately, offering higher yields will exacerbate the continent's debt woes. However, we posit that the potential cure for Africa's debt challenges may come from an unlikely source — ESG.

Adelman, Daniel

Institution: ***NY - Wells College***

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Daniel Adelman

Abstract Name: **Sustainable Waste Management in Foreign Military Bases**

Today's financial markets are dominated by environmentally and socially conscious investors allocating capital to entities demonstrating a long-term commitment to sustainability. Similarly, we hypothesize that these ESG-centric investors may be willing to lend to African nations at a lower interest rate if they strengthen their ESG performance. Capelle-Blancard et al. (2019); Martellini & Vallée, 2021: Crifo et al., 2017; Semet et al., 2021 find a negative, statistically significant relationship between overall ESG performance and sovereign borrowing costs. However, none of these papers focuses exclusively on Africa, and this paper seeks to fill this gap. Firstly, this paper explores the relationship between ESG performance and sovereign bond yields. Secondly, it aims to identify the pillars of ESG that have had the most significant impact on sovereign risk.

Adicherla, Shreyas

Institution: *VA - George Mason University*

Discipline: **Philosophy/Religious Studies**

Author/Contributors:
Shreyas Adicherla

Abstract Name: **Environmentally Enlightened: The Buddhist Cause for Ecological Preservation**

To investigate the impact of ESG performance on sovereign risk, we will use Margaretic & Pouget's (2018) econometric model and Blundell-Bond's one-step system Generalized Method of Moments (GMM) estimation. We will use Principal Component Analysis (PCA) and data from the World Development Indicators database to construct a composite ESG index that measures each nation's overall ESG performance. The bond yield spread data is obtained from Bloomberg. This study's sample is African countries that have issued dollar-denominated sovereign bonds between 2010 and 2022.

Adla, Yahia

Institution: *FL - Stetson University*

Discipline: **Biology**

Author/Contributors:
Yahia Adla,
Michael S. King

Abstract Name: **Spilanthol alters the consumption of, and taste reactivity behaviors elicited by, NaCl solutions in male Wistar rats**

NaCl is an essential nutrient that humans and mammals consume to maintain cellular homeostasis. Humans add salt to food for the resulting pleasing taste. However, as the amount of NaCl consumption increases the mortality of patients with cardiovascular disease and ischemic heart disease increases (Adler et al., 2014; Yang et al., 2011). Compounds that can enhance the taste of NaCl could help reduce NaCl consumption without sacrificing perceived saltiness. Spilanthol is a bioactive compound that induces tingling and numbing in the mouth and enhances the sensitivity of taste receptors to salt (Xu et al., 2019). In the current study, the effect of spilanthol on the consumption of, and taste reactivity (TR) behaviors to, NaCl solutions in male Wistar rats (n=8) was evaluated. Suggesting that spilanthol enhances the sensitivity to NaCl, 6μM, spilanthol increased the consumption of a dilute (0.1M) NaCl solution (n=4, $p < 0.002$) and decreased the consumption of a higher concentration (0.25M) of NaCl (n= 4, $p = 0.05$). TR behaviors are the immediate oromotor responses to intra-oral infusion of solutions and reflect the palatability of the solution in the mouth (Spector et al., 1988). TR behaviors are classified as ingestive (indicating palatable) and aversive (indicating non-palatable). Rats tend to respond to low concentrations of NaCl with ingestive responses and perform aversive reactions to high concentrations of salt. In the current study, spilanthol increased the ingestive TR responses (n=4, $p< 0.02$) while not altering aversive responses (n=4, p=0.19) to a 0.1M NaCl solution. However, spilanthol alone decreased ingestive behaviors compared to water ($p<0.01$). We conclude that spilanthol is a salt flavor enhancer that alters NaCl perception and consumption. Currently, we are investigating the neural mechanisms underlying the behavioral responses observed using immunohistochemistry to the Fos protein which is expressed in active neurons.

Adreon, Darcy

Institution: ***KY - University of Kentucky***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Lexi Nolletti *Darcy Adreon* *Bryna Vargo*, *David Rodgers*

Abstract Name: Using Enzyme-Linked Immunosorbent Assays (ELISA) to Understand Insulin-Degrading Enzyme (IDE)-Phosphatidylinositol Phosphate (PIP) Lipid Interactions

Insulin-degrading enzyme (IDE) has been linked to Alzheimer's Disease and Type II Diabetes due to its function in degrading insulin and the amyloid-beta peptide. IDE is, therefore, a potential therapeutic target for these diseases. This research aims to identify how IDE produced in the cell cytosol accesses its substrates, which are likely cleaved within the cellular endosomal system. It is hypothesized that some IDE localizes to endosomes by initially binding to phosphatidylinositol phosphate (PIP) lipids located in the endosome membranes. Computational docking studies suggested a site on IDE that might mediate an interaction with PIP lipid head groups. An enzyme-linked immunosorbent assay (ELISA) was used to evaluate whether mutations in this putative binding site disrupt interactions with artificial liposome membranes doped with PIP lipids. Results show that the mutations do affect PIP binding, with the variants IDE R824A,H885A,R892A and IDE Q813A,N821A,H885A having reduced or no detectable interaction with liposomes bearing phosphatidylinositol 4,5-bisphosphate (PI(4,5)). This loss or reduction of PIP interaction supports the hypothesis that IDE interacts specifically with PIP head groups and that this interaction is mediated by the proposed binding site. Improved understanding of this mechanism could someday enable the development of therapeutics for AD and/or diabetes mellitus and explain why these diseases are frequent comorbidities. While studying IDE-PIP interactions it was also observed that PIP lipids can bind in the inner chamber of the clamshell-like IDE molecule. The lab previously obtained a crystal structure detailing this binding interaction. Future work will investigate the possibility of IDE having a second function as a lipid transfer protein, which the lab is beginning to explore using a liposome-based lipid transfer assay.

Aeikens, Aiyana

Institution: ***RI - Brown University***

Discipline: Environmental Studies

Author/Contributors:
Aiyana Aeikens

Abstract Name: A New Generation of Farmers: Dynamics of Change?

With an aging farmer population set to retire in the next few decades, ambitions to change our agricultural system lie now with the next generation. Without dismantling the larger social structures that have kept current farmers from adopting conservation practices, however, the trends of soil and water degradation, consolidation, and pressure to reform are likely to remain the same. This project examines the factors that influence environmental change on a local level, and what supports are needed for farms to transition to sustainable practices. By doing semi-structured interviews of agricultural, environmental, and policy professionals in the Red Cedar Watershed, as well as attending local events related to these themes, I was able to observe the power dynamics that exist in the agricultural sphere. Qualitative findings suggest that most barriers to adoption are social and/or risk-based. Because of the high barriers to entry in agriculture, most younger farmers are tied to existing family operations and there is pressure to succeed, continue familiar practices, and consolidate for more financial stability. Additionally, farmers often rely on informal networks for knowledge sharing and many are hesitant or unaware of government programs that could provide aid. Fluctuating markets and increasing extreme weather events make it difficult, maybe impossible, for agriculture to continue its current path. Thus, I conclude by suggesting several policy and community-led programs that would aid younger farmers in a sustainable transition including financial support for new farmers to offset land, healthcare, and student debt expenses; greater support of local food and cooperatives; and expanded community education programs related to conservation agriculture.

Aftab, Lyba

Institution: ***NY - Brooklyn College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Lyba Aftab

Abstract Name: Exploring the attitudes, knowledge and beliefs regarding hospice care amongst racial and ethnic minorities

Hospice care is depicted to make the end of life comfortable and satisfactory. This research project explores the attitudes, knowledge, and beliefs regarding hospice and end of life care among racial and ethnic minorities. It is hypothesized that racial and ethnic minorities do not utilize hospice care as much as they could because of language barriers, less knowledge about the process of admission to hospice care and what it can offer them, cultural and religious beliefs, difficulties regarding health insurances and financial status. A lot of previous research has focused on exploring how socioeconomic status and Medicare claims contribute to employing hospice care. This research will be conducted using a convenience sample of 200 which will include Brooklyn College students and members of the larger Brooklyn Community. A survey approved by the IRB will be used to collect data. It is expected that there will be negative attitudes and beliefs and limited knowledge regarding hospice care amongst racial and ethnic minorities as compared to the white population. The unavailability of information to racial and ethnic minorities creates barriers to reaching out for end of life care. This calls for exposing these minorities to both educational and socioeconomic resources which could lead to positive beliefs and attitudes regarding hospice care.

Afzal, Aaminah

Institution: ***NY - Siena College***

Discipline: Public Health

Author/Contributors:
Shriya Matta,
Aaminah Afzal,
Anum Tehseen

Abstract Name: Food As Medicine Program Analysis

The relationship one has with food is directly correlated with one's health. Our current health system has a severe issue with individuals with chronic illnesses who face issues of affordability and accessibility to food. This has led food pantries across the country to develop food as medicine programs which can consist of medically tailored meals, medically tailored packages, and nutritious food referrals. Ultimately, the goal of these food intervention programs is to help create a better lifestyle and improve the health of individuals with food insecurity and chronic illnesses. This presentation will focus on an analysis of the Food as Medicine program at the Food Pantries for the Capital District. Our hypothesis is that Food as Medicine intervention programs improve the health of individuals with chronic illnesses which is evident through the changes in their A1C levels, BMI, number of hospitalizations, and blood pressure.

Agarwal, Akhil

Institution: ***CA - San Jose State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Bhavya Bellannagari,
Akhil Agarwal,
Aahan Patel,
Sohail Zaidi

Abstract Name: MATLAB Image Processing for 2D Traversing Plasma Device designed for Wound Healing and Sterilization

Non-thermal Dielectric Barrier Discharge plasma jets find applications in plasma medicine. In practice, these incident plasma jets are exposed to skin wounds; therefore, an effective scanning of the wound surface is required. In the current research, a plasma scanning system was developed and tested. Various wound images were provided for the system to scan with a plasma jet. For this purpose, a Logitech camera connected to a Raspberry Pi was used to capture the required artificial wound (printed on a piece of paper) image area. This information was relayed to a 2D scanning device that held the plasma jet to scan the targeted area. A MATLAB based algorithm was used to identify the wound area by isolating red color pixels by using a specified threshold value. Inbuilt MATLAB functions were used to identify the minimum and maximum x- and y-values of the wound pixels to generate a bounding box. The developed program rotates the image and regenerates this bounding box at 1- degree intervals, and minimizes the area. The developed software was tested to identify a leg wound image (1.4in x7.3in). The pixel color contrasts were used to mark the boundary around the wound that ended up as a rectangle (1.3in x 7.4in). This was within an accuracy of 94% of the targeted area. To identify the limitations of the imaging software, different wound images (oblong, square, irregular, circular) were tested. Low color contrast between the skin and the wound surface appeared as the main limitation for the software. This presentation will include discussion on the scanning software development, the DBD plasma jet generation, and the functioning of the 2D traversing device which was employed to scan wound surfaces.

Agbayani, Hannah

Institution: ***CA - Loyola Marymount University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mike Hennessy *David Kandah* *Hannah Agbayani,*
Kennedy Necoechea *Tyler Keen* *Connor Powers*

Abstract Name: Spray Integration in the Cooling of High Heat Flux Electronics

Spray cooling is an efficient cooling technique for high heat flux applications like metal forming and electronic cooling. However, without fundamental knowledge of fluid mechanics in these applications, spray cooling can be ineffective due to dry-out at low spray rates, or excessive liquid accumulation at high spray rates. In electronics like computer chips, these errors can cause crucial and expensive failures. The purpose of this research is to further understand the fluid mechanics and heat transfer processes behind spray cooling, enhance the ability of the process, and develop a phase diagram of collected data. The first technique researched was single droplet impingement. To obtain data, a high-speed camera was used to take detailed videos of microdroplets produced from a piezoelectric nozzle. Microdroplets of various liquids, including ethanol, isobutanol, and isopropanol, were dropped onto a heated copper surface, with the surface temperature ranging from 60 to 200 degrees Celsius. Droplet diameter, velocity, and resident time were tracked, as well as the associated behavior of evaporation, boiling, or leidenfrost, and the rate at which this occurred. These results contribute to the understanding of mechanical properties of microdroplets, discovering which combinations of droplet diameter, velocity, and liquid properties will improve their function in spray cooling. Another aspect researched was the ability of multi-droplet sprays to cool a heated surface via impingement and evaporation. An experimental setup was developed and assembled consisting of a pressurized air and water supply connected to an ultrasonic atomizer nozzle, heated plate, and thermocouples that relayed results to a data acquisition system. Preliminary results determined that cycling nozzle operation yielded similar cooling results to continuous spray, while saving up to 70% of fluid consumed. Future variables to explore include recycling atomized vapor, determining optimal timing of cycles, and testing additional liquids.

Agrawal, Rishit

Institution: ***CA - San Jose State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Charles Kelzer *Sahana Chowlur* *Rishit Agrawal*
Sohail Zaidi *Vimal Visvanathan*

Abstract Name: Characterizing an Exoskeleton Device for Leg Muscles Rehabilitation

Stroke patients very often suffer from disability and are unable to walk freely. To regain their mobility, they need rehabilitation exercises. Commercial exoskeleton devices are availble but these are either very expensive or do not fulfill the patient's particular exercise requirements. An ongoing project at the San Jose State university is engaged in designing and developing an exoskeleton knee brace that will be cheap and will be user friendly [IMECE 2020, 2021, 2022, SCCUR-2022]. This knee brace relies on the fluidic muscles (Festo Corp) that use air pressure to mimic the leg muscles movement. The device consists of two parts, an upper brace for the front of the thigh holding the fluidic muscles and a lower brace behind the calf. The operating system includes a central control box that contains multiple solenoids and valves that are controlled by a central microprocessor (Arduino). The central system was activated by EEG sensors that were mounted on a human leg to activate the exoskeleton device. The EEG sensors' response was further processed for the noise reduction and was amplified by using an amplifier. Five fluidic muscles were characterized and calibrated before mounting them on a mannequin leg. Further experiments helped to optimize the knee brace design to mount it on a human leg. Experiments were performed to characterize the device operation by measuring the average leg rotation time and the maximum rotation angle as a function of applied pressure. Experiments show that the average time to reach the maximum rotation angle varied from 18 to 36 degrees where the rotation time varied from 1.58 to 1.23 seconds as the pressure increased from 30 to 60 psi. The presentation will detail the design and the operation of the exoskeleton device and will also describe the experimental results in a greater detail.

Aguilar, Austin

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Austin Aguilar

Abstract Name: Stress on elementary school teachers during COVID-19(2020-2022).

From December 2019 to 2022-present COVID-10 almost stopped the education system. How we teach our younger children can have a great impact on future generations if both the teachers and students are stressed trying to learn new online learning methods in times of a pandemic. Trying to figure out the stress factors of teaching during COVID-19 consisted of bad communication with both caregivers and faculty. Stress trying to teach children who don't have access to technology or are not in great family situations can both affect the teachers in not being able to help the students and students not having the time away from bad family situations and having a healthy place to learn. The current research addressed these issues throughout how teachers felt during th first couple months and the problems they encountered and how they decided to adapt and dhcange to give the most effective way to teach the children. Each school district had their own set of rule and regulations depending on the state they taught in.

Aguilar, Yodalys

Institution: ***AR - University of Arkansas***

Discipline: Psychology/Neuroscience

Author/Contributors:
Yodalys Aguilar,
Matt Judah,
Russell Mach

Abstract Name: Factors Predicting Anxiety and Depression Among International Students

Anxiety and depression are common problems that interfere with functioning. There is very little research to understand what factors predict anxiety and depression in international students attending universities in the United States compared to the broader student population. One possible factor could be acculturation, the process by which an individual or a group adopts cultural practices and values while maintaining their own culture. Acculturation has been found to be linked with an increased odds of having a lifetime psychological disorder. Thus, research on acculturation and symptoms of anxiety and depression in international students is needed to better understand the mental health risks, namely loneliness and rumination, faced by international students. Our research examines the association between acculturation and internalizing symptoms (i.e., anxiety and depression) in a sample of international students who are participating in study abroad programs. Two hypotheses guide this investigation. First, we hypothesize that acculturation will be positively associated with later anxiety and depression symptoms. Second, we hypothesize that the associations of loneliness, rumination, discrimination and identity with later depression and anxiety will depend on acculturation, such that the associations will be stronger at higher levels of acculturation. We are testing these hypotheses with hierarchical regression. One model includes anxiety symptom severity as the outcome, and the other treats depression symptom severity as the outcome. In each model, loneliness, rumination, discrimination, identity, and acculturation are predictors in step 1. In step 2, the interaction of acculturation with each of these variables is added to the model. The data are still being collected and that results will be presented at the conference.

Agyemang Sereboo, Nana Adwoa

Institution: ***GHA - Ashesi University***

Discipline: Business

Author/Contributors:
Nana Adwoa Agyemang Sereboo

Abstract Name: Digital Financial Literacy and Small Business Performance in the Post-Pandemic Era

Financial Literacy (FL) has long been a topic of interest due to its many proven benefits (Ouachani et al., 2020). Rapid digitalization of firms - including financial service providers - has introduced a new strand in this field known as Digital Financial Literacy (DFL) which assesses the bridge between FL and basic digital skills. The pandemic forced businesses to adopt digital financial services (DFS) which most probably affected their business performance. This study aims to investigate the relationship between DFL and the performance of small businesses in Ghana after the COVID-19 pandemic. Modifying Lyons and Kass-Hanna (2021)'s framework to suit local conditions, this study will use surveys to measure DFL of business owners. Firm performance will be evaluated using growth in sales, revenue, and number of employees. A regression analysis would determine the nature of the relationship between these two variables. Most likely, there will be a strong positive relationship since efficient use of DFS, among others, cuts down the cost of making and receiving payments. This will indicate the need to integrate DFS in operations. Providers of financial services, informed by the results of this research will then be able to design better-suited DFS for small businesses. Services tailored to the unique operations of small businesses in Ghana would boost performance even more. The first of its kind in Ghana, this study opens up a new strand of literature within the context of Africa. Further research based on this study can explore how DFL affects other firm fundamentals like efficiency and resilience.

Ahanotu, Adaeze

Institution: ***TX - Texas Woman's University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Adaeze Ahanotu *DiAnna Hynds* *Laura Hanson*
Prapti Mody

Abstract Name: Contribution of Infection with Cytomegalovirus (CMV) to the Production of Amyloid Precursor Protein (APP) and Alzheimer?s Disease-associated Beta Amyloid

With more than 6 million people in the United States living with Alzheimer's disease, the disorder is the most common cause of neurodegeneration and dementia. Persons infected with cytomegalovirus (CMV) are more than twice as likely to develop Alzheimer's disease and have faster cognitive decline after diagnosis. Alzheimer's disease is characterized by the formation of tau-based neurofibrillary tangles commonly seen in other neurodegenerative conditions, and the formation of extracellular β-amyloid plaques, a pathology unique to Alzheimer's disease. We hypothesize that CMV infection will promote increases in pathological markers of Alzheimer's disease. To test our hypothesis we are infecting CMV permissive cell types with murine CMV (MCMV) and measuring changes in pathological markers of Alzheimer's disease. Using western blotting, we have determined that MCMV infection increases phosphorylation and the accumulation of high molecular weight isoforms of tau in fibroblasts, neuroblastoma cells, and primary cultures of rat cortical neurons. While preliminary experiments did not show a decrease in the amount of amyloid precursor protein in MCMV-infected cells, we are more finely assessing production of intra- and extracellular β-amyloid levels using western analysis, immunocytochemistry, and enzyme-linked immunosorbent assays (ELISAs). Conducting these experiments will provide a comprehensive view on the contribution of MCMV infection to Alzheimer's disease pathology, addressing the mechanisms through which CMV infection might increase the risk of developing this neurodegenerative disorder, potentially identifying novel therapeutic targets.
Supported by Texas Woman's University (TWU) Division of Biology, a TWU Center for Student Research grant (to P.H.M), and a National Science Foundation (NSF) Promoting Research and Innovation in Methodologies for Evaluation grant (supporting AA, #1953448) from the TWU Research Enhancement Program (to DLH).

Ahir, Hinal

Institution: ***CA - San Jose State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Hinal Ahir,
Akul Murthy,
Darshan Mundewadi

Abstract Name: Automated Temperature Control of a DBD Plasma Jet Through Feedback Loop

Low temperature, non-thermal Dielectric Barrier Discharge (DBD) plasmas find wide applications in plasma medicine. Due to their low gas temperatures, along with numerous radicals such as Nitrogen and Oxygen reactive species, plasmas are able to heal and sterilize wounds. A plasma jet is formed when voltage (~5-10 kV, 20-40 kHz) is applied to a Helium gas (~10-20 slpm). During medical application, it is important to limit the temperature of the plasma jet to avoid any damage to the exposed cells. For practical purposes, the control of plasma gas temperatures in real time is required. In this study, an automated system has been designed using stepper motors, a power supply, a K-type thermocouple, motor controllers, and an Arduino microprocessor. The system is designed to constantly read the plasma jet temperatures, light the green or red LED indicating the safe temperature zone, and controlling the power supply through a feedback loop control by adjusting the power knob of the power supply in an automated fashion. The optimum operating temperature was fixed at 30 degrees centigrade (obtained from literature for safe plasma operation) and the system was activated as soon as the temperature deviated from this targeted value. In this study both a helium plasma jet and a helium plasma sheet were scanned by a thermocouple to obtain two-dimensional temperature distribution with and without the automated system. Experimental results show that the feed back control system was able to control the temperature by adjusting the power supply in a correct manner. The plasma temperatures near the exit of the plasma device were found lot higher than 30 degrees Centigrade. The plasma jet exhibited lower temperatures as it propagated throughthe air. The presentation will describe the automation process in a greater detail and will discuss the experimental results from biomedical application perspective.

Ahlbrecht, Ethan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Public Health**

Author/Contributors:
Oksana Laura Horstman,
Ethan Ahlbrecht,
Trinity Wilson,
Danielle Zahn

Abstract Name: **Investigation of Ventilation and Air Quality in Classrooms**

The transmission of the coronavirus can be greatly impacted by indoor ventilation and air purifiers according to the U.S. Environmental Protection Agency and other public and private institutions and researchers. The concentration of aerosols in the air that contain the virus can be reduced by proper ventilation systems, which circulate and filter the air for increased quality. Aerosols with a diameter of2.5µm or lessare a possible carrier of SARS-CoV-2. PM 2.5 pollution may also increase the cellular expression of ACE2, associated with greater viral susceptibility. Ventilation to reduce PM 2.5 levels addresses both risks. Tests using incense as an indicator before, during, and after burning were used to see how quickly the ventilation in the rooms was able to remove excess PM 2.5. A calibrated DustTrak II monitor was used to record particulate matter, then Honeywell HEPA air purifiers were emplaced to see if further purification would aid in ventilation compared to only an HVAC system. Room air exchange rates (ACH, hr-1) were calculated using a spreadsheet by Jimenez at UC-Boulder. ACH rates in a small (15 person) meeting room were 5.88 hr-1 with HVAC alone and 16 hr-1 with two added air purifiers. Corresponding rates in an average (35 person) classroom were 9.62 hr-1 and 12.0 hr-1 with a single purifier. In this case, HVAC and air purifier coverage was 1.25–2.72 times as efficient as just HVAC coverage. Results for local weightlifting rooms are currently being investigated and will be included. A limitation of this research was the occasional pooling of incense smoke near the opening of the air monitor leading to a temporary spike in PM 2.5 levels. Use offans can address this issue. HEPA air purifiers reduce PM 2.5 levels and in turn may help lessen transmission risk of SARS-CoV-2 aerosols and airborne viruses.

Ahmed, Izzeldin

Institution: *AR - Arkansas State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Izzeldin Ahmed,
Grover Miller,
Sergio Vazquez

Abstract Name: **What are the Drug-to-Drug Interactions Between Xanax and Synthetic Cannabinoids?**

During the COVID-19 pandemic, depression, anxiety, and isolation caused by lockdowns and economic hardships drove substance abuse of both illicit and prescribed drugs to record high levels. Xanax, more commonly referred to as alprazolam, is an anti-anxiety benzodiazepine commonly prescribed to treat short term anxiety. According to figures from the United States Drug Enforcement Administration, alprazolam is amongst the top three prescription drugs diverted to the black market. Overdoses caused by alprazolam often may occur when combined with illicit drugs such as synthetic cannabinoids. Synthetic cannabinoids are commonly known as K2 and spice, and induce a “high” similar to cannabis but cause significant adverse side effects, such as cardiovascular and gastric issues. Synthetic cannabinoid account for a third of all new drugs of abuse on the market. Those suffering from substance use disorders are likely to mix alprazolam with synthetic cannabinoids which could lead to death due to drug-to-drug interactions. This possibility is supported by autopsy and clinical reports. Nevertheless, there is no research on the impact of these drug combinations on metabolism and subsequent parent drug levels that could cause adverse drug effects. In response, this project was designed to study drug-to-drug interactions of the synthetic cannabinoid 5F-APINACA and alprazolam in humans based on steady-state kinetics studies using human liver microsomes. Previous work done in the lab has identified the kinetics of 5F-APINACA in human liver microsomes. We will be comparing the previous kinetic data of 5F-APINACA to the kinetic data after adding alprazolam to 5F-APINACA in kinetic assays using human liver microsomes. Preliminary results show that alprazolam is a mixed inhibitor of 5F-APINACA, but futher experiments are still required. The metabolic kinetics in this study will be key to having a better understanding of the metabolic effects caused when substance abuse users mix alprazolam and synthetic cannabinoids.

Ahmed-Weidman, Sarah

Institution: ***NY - Siena College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sarah Ahmed-Weidman

Abstract Name: The Intersection of Foster Care, Substance Use, and Incarceration

According to the National Conference of State Legislatures, up to 80 percent of children in foster care have significant mental health issues, compared to approximately 18 to 22 percent of youth in the general population. The American Academy of Pediatrics, "Healthy Foster Care American Initiative", identifies mental and behavioral health as the two "greatest unmet health needs for children and teens in foster care." Traumatic experiences that a large percentage of foster youth report, combined with the fact that the general population of adolescents begins drinking anywhere from age 13 until 17, increase the likelihood of substance use disorders in foster youth. Another study conducted by National Household Survey on Drug abuse found that 40 percent of adolescents who had resided in various foster care placements were likely to use alcohol compared to 30 percent of youth in the general population, and they were twice as likely to use drugs. In addition, close to one-fifth of the U.S. prison population are former foster children. This study examines the prevalence of substance abuse in foster care youth whose voices are silenced. Through a meta-analysis of current literature, we create a policy and advocacy resource that educators, policymakers, and advocates can use. While some counties and cities in the US provide services in an attempt to support youth, the quality and quantity of programs offered vary considerably, due to limited available funding, lack of education, awareness, and/or staffing. More preventative services for substance use disorders need to be made available, and there needs to be a focus on providing better quality mental health services. In addition, foster parents should be required to complete in-person trainings that are more in-depth and more frequent.

Ainsworth, Alec

Institution: ***CA - California State University - Fullerton***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Alec Ainsworth

Abstract Name: The Role of Spanish-language Press in the United States in the First Half of the Nineteenth Century

The cultural perspective of having different ethnicities and races contributing to their unique history establishes mass progress following the creation of American Studies in the middle of the 20th century. My research focuses on the perspective of Hispanic, Spanish-speaking American news-press starting in the 19th century concerning its origin and how the Spanish-language press covered black and African Americans. Explicitly, I am attempting to establish a shared history between Hispanic Spanish-speaking Americans in their attitudes and coverage of black and African Americans in Spanish-language newspapers from 1808 to the Civil War. The purpose of my research is to decern that Spanish can be used as a tool to examine the collective shared American history of all ethnicities and races. The cultural lens of American and other ethnic studies can be utilized to investigate other groups of Americans that existed at the same time. The purpose of using newspapers is to establish a primary source account of the direct voice of the individuals who produced news, advertisements, and other various forms of commentary. Researching Spanish-language newspapers has uncovered several discrepancies from the expectations I presumed of the 19th century, including the owning of enslaved people and how I predicted enslaved and black Americans to be discussed in the 19th century were deterred in my findings. While Spanish-language press has been addressed by other scholars in the past, especially in Southwestern communities, my research is explicitly focused on utilizing the Spanish-language press as a means to add a Hispanic lens that could add to the overall perspective of American history as currently documented.

Airesman, Ryan

Institution: *VA - Liberty University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Ryan Airesman

Abstract Name: **In-Air Sonar System for High-Speed Drone Flight Through Cluttered Environments and Poor Environmental Conditions**

State-of-the-art in-air sonar systems fall far short of enabling the phenomenal perceptive detail and flight performance exhibited by the echolocating Microchiropteran bats. As the Microchiroptera demonstrate, collision-free flight navigation through cluttered environments and poor environmental conditions can be performed reliably at high speeds while exclusively using in-air sonar. We hypothesize that drones can achieve this performance by mimicking the ultrasonic emission capabilities of the Microchiroptera and by inferring flight trajectories using a deep neural network (DNN) trained in a simulation that fully models the acoustic phenomena used by echolocating animals. A novel phased array architecture based on capacitive micromachined ultrasonic transducer (CMUT) technology has the potential to fully mimic the transmissions of the Microchiroptera by generating large-amplitude, wideband ultrasonic waves with variable direction and beamwidth. To receive the echoes with high directional determinability, a large array of tiny micromachined digital microphones can be directly interfaced to an FPGA for processing. A deep neural network (DNN) model that uses convolutional layers to detect features in the microphone data across the time dimension can output collision-free flight trajectories to reach a desired destination at a given trajectory. To train the DNN, a novel finite volume method (FVM) is proposed to enable the efficient simulation of the nonlinear interactions between acoustic waves and provide a physically accurate virtual environment for drone flight with sonar. This research has the potential to enable a large range of technological developments and integrations due to the unique advantages that in-air sonar has over other spatial sensing technologies (e.g., computer vision). Additionally, the described DNN model could be trained to enable a wide range of complex tasks beyond drone flight, such as detecting objects that are not in line-of-sight of the sensor and identifying objects based on their acoustic signatures.

Ajayi, David

Institution: *MN - University of Minnesota - Rochester*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
David Ajayi

Abstract Name: **Investigating the Mechanism of nanoparticle toxicity by tracking H202 production with electrochemical techniques**

Nanoparticles are increasingly being applied to new technologies as their unique size-dependent properties contribute to more efficient systems. However, the use of nanoparticles hasn't come without a cost. Studies show that these engineered nanomaterials can lead to toxic effects on the life present in the environment by producing reactive oxygen species like hydrogen peroxide (H2O2). H2O2 is a powerful oxidizer that remains relatively stable in abiotic environments. However, H2O2 also has the capacity to rapidly kill cells via hydroxyl radical generation. Lithium Cobalt Oxide (LCO) and lithium nickel manganese cobalt oxide (NMC), both nanoparticles used in the fabrication of lithium-ion batteries, were tested for the generation of H2O2. Using the electrochemical techniques amperometry and cyclic voltammetry, the voltage and current of the LCO and NMC solutions were compared with a background solution of 0.1M potassium nitrate (KNO3), in order to track the production of H2O2 from these material in solution over 26 hours. Findings suggested that LCO leaked H2O2 into the solution overtime, with the most H2O2 being released in the first 30 minutes. H2O2 emanated from these nanoparticles could explain the mechanism for their toxicity in the environment, informing the creation of safer nanomaterials in the future.

Akpadija, Precious-Gold

Institution: *IN - Indiana University South Bend*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Precious-Gold Akpadija

Abstract Name: **Effect of Guanidinium Content on the Anion Binding Capacity of Polyallylamine-Based Polymer Networks**

Crosslinked polymer networks have essential uses as sponges that remove unwanted or excess compounds from water. For example, a crosslinked network of polyallylamine, known as sevelamer, is a drug used to treat hyperphosphatemia, a disorder involving excess phosphate in the body. It works by binding dietary phosphate in the digestive tract, thereby preventing excess absorption by the body. In this research, we built on what is known about sevelamer, replaced the amino group in polyallylamine with guanidine, and studied the effect on binding to different classes of anionic molecules. Previous studies from our group found that increasing the amount of guanidine decreased the binding capacity of the networks for inorganic phosphate. Here, we study the binding capacity of different polymer compositions to glyphosate and bile acids. Polymer networks were prepared from polyallylamine hydrochloride (PAA), which was converted to polyallyguanidine-polyallylamine (PAG-PAA) copolymers with different amounts of a guanylating reagent. These copolymers were crosslinked with epichlorohydrin to create three networks: PAA (sevelamer), 25%, and 50% PAG-PAA. These networks were incubated with glyphosate, and the binding capacity was assessed by the change in glyphosate concentration, which was determined using both ascorbic acid malachite green assays. Our results suggest that glyphosate capacity increases with increasing guanidinium content. A colorimetric enzyme-based assay is being used to study bile acid absorption by the polymers, but the project is ongoing regarding bile acids. Overall these results will inform the future design of polymer resins for the treatment of medical conditions and environmental remediation.

Akter, Marzea

Institution: *TN - Middle Tennessee State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Marzea Akter,
Tiffany Rogers

Abstract Name: **Effect of acute oxytocin administration on social behavior in male and female mice**

Oxytocin is a neurotransmitter and hormone with a well-established role in prosocial behaviors in animals and humans. It is currently being tested in clinical trials for the treatment of social symptoms associated with autism spectrum disorders. However, the behavioral effects of oxytocin treatment have been variable with both prosocial (increased empathy) and antisocial (increased competitiveness) behaviors resulting in humans. Previous studies in our lab have shown increased anxiety-like behaviors in mice treated chronically with oxytocin (1 12 ug dose per day for 14 consecutive days, data unpublished). The current study aims to see the effect of acute oxytocin administration on social behavior in male and female mice to determine if the schedule of oxytocin administration affects behavioral outcomes. Adult C57BL/6J mice will be acutely pretreated with saline or oxytocin (12 µg) an hour before the behavior tests. Saline or oxytocin will be administered either intranasally (i.n., 12 ug in 12 uL, 6 uL per nostril) or intraperitoneally (i.p., 12 ug in 120uL). Mice will complete a battery of behavioral tests including the elevated plus maze (EPM), three-chamber sociability task (3C), and free dyadic social interaction (FDSI) after drug administration to determine changes in social behavior and anxiety-like behavior. Noldus EthoVision XT and human coders will code anxiety-like behaviors, social preference, and social novelty. I expect to find that acute oxytocin administration will increase sociability as measured by the 3C and FDSI tasks while avoiding increases in anxiety-like behaviors, as measured by the EPM task, associated with chronic administration.

Al Zaydan, Mouda

Institution: ***NY - Siena College***

Discipline: Education

Author/Contributors:
Mouda Al Zaydan,
Theologia Sofi

Abstract Name: The Excellence Capsule (NExT)

Transformational leadership is a leadership style that can inform our high-impact educational practices by serving as a better capacity builder for students. Inspiring positive changes in those who follow, transformational leaders are generally energetic, enthusiastic, and passionate. Not only are these leaders concerned and involved in the process, but they are also focused on helping every member of the group succeed. The Nonprofit Excellence and Transformation (NExT) Program makes for a great capacity-building opportunity by focusing on the progression of professional development. We hypothesize that the NExT program serves as an excellence capsule not only for the non-profit organizations that they partner with but for the student by expanding their knowledge, professional skills, and cultural awareness, through a gradual process that prepares them for their next step in the real world.

Alaa, Mariam

Institution: ***EGY - The American University in Cairo***

Discipline: Psychology/Neuroscience

Author/Contributors:
Maya Shehata,
Mariam Alaa,
Dana Wasfy,
Kene Uwajeh

Abstract Name: Conformity and Friendship Satisfaction Among University Students

The rhetoric around one's role in a friendship or relationship is largely shaping up to promote a lack of conformity. Adolescents and young adults are now regularly told to "stand out" and perhaps that fitting in isn't always the best option. This, however, prompts the question of what role conformity plays in impacting friendship satisfaction. This paper explores whether there's a correlation between an individual's level of conformity and their level of friendship satisfaction. Gender and relationship status are explored as potential mediators in this relationship. The participants' level of conformity was measured using the Elevator experiment, where participants enter an elevator and find 4 other people facing the rear end of the elevator. Participants accordingly make one of three decisions, they either turn and face the rear end (conformity), continue standing the same way (non-conformity), or hesitate (mid-level conformity). Participants then completed a questionnaire that assesses their level of platonic friendship satisfaction across three scales. This process was completed 75 times by participants, with 25 students conforming, 25 not conforming, and 25 mid. Results of the Anova show that there is no significant correlation between conformity and friendship satisfaction; however, there was a significant correlation between gender and friendship satisfaction, which indicated that girls are overall more content with their friendships. This opens lots of areas for future research, as it can be worthwhile to explore some of the other factors that result in girls being more satisfied with their friendships at this specific age.

Alam, Zoha

Institution: ***VT - Norwich University***

Discipline: **Mathematics**

Author/Contributors:
Zoha Alam

Abstract Name: **Identifying Disparities in Elementary Education**

Multivariate data from several sources on the New York City Public School students was mined and analyzed by several factors including gender, race, household income, and community income. These data illustrate the achievement gap in the New York City schools among various socio-economic groups and racial and ethnic groups. Analysis of the aggregate data showed that students from families classified as low-income had lower levels of proficiency on a third grade math assessment than students from households not classified as low-income. Further analysis revealed that scores were not, in fact, tied to the income level of students' household, but rather associated with the socio-economic status of the school community. This presentation will describe the process of mining and analyzing the multivariate data set as well as the findings of the analysis.

Albano, Andrew

Institution: ***VT - Norwich University***

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Andrew Albano,
Ann-Frederique Guay,
Ingrid Holstad Berge,
Dong Son Doan Tran

Abstract Name: **Harvesting the Sun and Wind for Portable Microgrid Applications**

Globally, it is understood that reducing carbon dioxide (CO2) emissions is a high priority. As such, 137 countries have pledged to reach carbon neutrality, of which 90% are targeting to complete this by 2050. Advances in renewable energy are required to facilitate these goals, with significant focus on contributions from wind and solar. Mobile microgrids featuring renewable resources are an essential milestone toward these goals. The American Society of Mechanical Engineers (ASME) is hosting a microgrid competition in the form of solar and/or wind powered remote controlled vehicles. The vehicle is required to transport weight from a charging station to an unloading area over a 10-minute time frame. Ideation methods were used to prepare conceptual designs. Upon finalizing the concept design, the detail designs were completed and a prototype was built to harness both wind and solar energy while storing it in a supercapacitor array. Size constraints and scoring bonuses for minimized size fostered unique arrangements of solar panels with minimized projected area and foldable wind turbines to minimize total package volume. The energy harvesting, storing, and size minimizing design applications considered for the final design can be applied to small, portable microgrids for low energy harvesting applications in emergency response situations.

Albenze, Eliza

Institution: ***PA - Pennsylvania State University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Eliza Albenze *Tarkeshwar Singh* *John Kpanka*
Mauro Nardon

Abstract Name: Effects of saccadic and smooth pursuit eye movements on whole body postural responses during upright perturbed reaching movements.

During daily activities, such as a simple reaching task, motor control and coordination of the upper and lower limbs are essential for successful completion of the task. This coordination is done through anticipatory and feedback responses in the upper and lower limbs, which includes corrections to center of pressure (the point where the force due to pressure passes through the body) ensuring balance is maintained throughout the task. Anticipatory and feedback responses occur when upper and lower limb muscles activate before any movement is initiated, which helps maintain balance and posture during the task. There is already evidence that mechanical perturbations applied to the upper limb elicit rapid responses in lower limbs; however, it is unclear if different eye movements (smooth pursuits and saccades) affect upper and lower limb coordination, specifically during mechanical perturbations. The study aims to identify the potential differences in muscle activity during perturbed and unperturbed reaching movements when different eye movements are utilized. The experiment includes two tasks: a reaching and visuomotor tracking task. Reaching movements to peripheral targets requires saccadic eye movements, while the tracking task requires smooth pursuit eye movements. The preliminary results indicate that there is a clear shift in center of pressure along the medio-lateral axis occurring approximately 80-100ms before the reaching movement is initiated in both conditions, indicating a possible anticipatory response. Upon further analysis, we anticipate seeing differences in EMG muscle activation during perturbed trials for the two conditions with specific interest in the long latency reflex period occurring 75-120ms after force onset in lower limbs and 75-105ms after force onset in upper limbs. We will quantify how different types of eye movements would affect anticipatory and feedback response. We will also identify if saccades and smooth pursuits provide feedback for anticipatory and feedback responses in upper and lower limbs.

Alcantar, Tomiyah

Institution: ***TX - Tarleton State University***

Discipline: Social Work

Author/Contributors:
Kathryn Hamilton,
Tomiyah Alcantar,
Emily Martin

Abstract Name: Male Participation in Parent Education

The student researchers seek to create an environment that motivates fathers to attend ;parent education courses by exploring the factors involved in the participation of males in parent education. The student researchers targeted a sample size of 78 fathers while utilizing a mixed methodology survey with an emphasis on quantitative. The students distributed this survey through online platforms and local grocery stores. The student researchers collected data during a three-week-long period. The survey contained five demographic questions regarding age, race/ethnicity, marital status, number of female children, and number of male children. The majority of respondents were ages 41 to 50, (28.2%; n=22), 20.5% (n=16) were ages 31 to 40, 16.7% (n=13) were ages 20 to 30, 12.8% (n=10) were ages 51 to 60, 10.3% (n=8) were ages 61 to 70, 7.7% (n=6) were ages 71 to 80, and 2.6% (n=2) were 81 to 90 years of age. Regarding race/ethnicity 85.4% (n=51) of respondents were White/Caucasian, 28.2% (n=22) were Hispanic, 2.6% (n=2) were American Indian/Alaskan Native, 2.6% (n=2) were Black/African American, and 1.3% (n=1) were Asian/Pacific Islander.The student researchers created a code sheet using Google sheets, which consisted of converting the survey questions into a code. The student researchers used the Statistical Package for Social Sciences (SPSS) to analyze data collected. The student researchers utilized the Hahn's Coding Process to analyze the qualitative data. The themes: Work, Family, Time, and Disability consist of responses that reveal obstacles within the father'slives that would interfere with their attendance toparent education classes. Conducting this research provides information to include programs specifically for males to become more involved in parent education.By gaining insight from fathers in the community, the researchers will brainstorm ideas on how to make it easier for fathers to be able to attend parent education classes.

Aldag, Ava

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Ava Aldag,
Tyler Doyon

Abstract Name: **Biocatalytic Upcycling**

Nature has evolved a variety of enzymes capable of breaking down chemical waste products to generate carbon source fuel for survival. Non-heme iron ring cleaving dioxygenases (RCDs) are a class of biocatalysts that break down aromatic chemical waste products to generate important organic building blocks, such as muconic acids and muconic semialdehydes. While these enzymes have been explored for their potential as bioremediation catalysts, there are relatively few examples of their use in preparative scale synthesis. We envision that these enzymes will enable upcycling of waste products to produce useful quantities of valuable organic building blocks. In these studies, we are analyzing the ability of an extradiol dioxygenase, BphC, to produce muconic semialdehydes and conjugated ketones under preparative scale conditions. Existing research on BphC has been limited to reactions with catechols at low substrate concentrations. Our work utilizes UV-vis spectroscopy to analyze reaction progress while optimizing conditions such as reaction temperature, time, pH and buffer composition. Initial studies confirm that the isolated BphC catalyst is active and is capable of generating structurally diverse semi-aldehydes and ketones. This data will be used to develop a preparative scale reaction platform for synthesis, isolation and characterization of reaction products.

Aldridge, Xing

Institution: *NC - Western Carolina University*

Discipline: **English/Linguistics**

Author/Contributors:
Xing Aldridge

Abstract Name: **Empathetic Portrayals of Homelessness and PTSD in Home and Stories from the Shadows**

The realistic views of resignation in Home, Toni Morrison's historic fictional work, combined with the resiliency of individuals in Stories from the Shadows, present an accurate depiction of the human experience regarding homelessness, PTSD, and other hardships. Homelessness is a pervasive problem in U.S. society, and both books demonstrate that acknowledgment and understanding are the only way to improve the lives of those who struggle with it. These works also illustrate the difficulties those living with PTSD face. Home follows the journey of Frank Money, a Korean War veteran, as he discovers who he is and where he belongs. The ideas and theories of individuals presented in this novel are supported by the real-life stories Dr. Jim O'Connell recounts in Stories from the Shadows. The combination of these two works depicts an American society that fails to protect its people and alienates those who struggle. Together, the works create an acknowledgment of the undeniable strength that these individuals hold and maintain. Morrison and O'Connell's advocacy for those suffering from homelessness or PTSD invites compassion and empathy. Although those living in adverse conditions may have resigned themselves to a lifetime of failure and tribulation, they are not to be further condemned by individuals unwilling to lend a helping hand. Home and Stories from the Shadows engage readers so that they might discover what it is like to live in distress on the outskirts of society.

Alexandra, Nadja

Institution: ***NY - Adelphi University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Nadja Alexandra *Christina M. Marini*

Abstract Name: COVID-19-Related Disruptions on Relationships and Their Effects on Older Adults' Depressive Symptoms: Perceived Mattering As A Moderator

Older adults faced unique challenges during COVID-19 lockdowns, including restricted contact with loved ones. As a vulnerable group during the pandemic, the risks of exposure carried heavier consequences leading to most older adults and their caregivers placing great importance on adhering to isolation guidelines. The disruptions caused by COVID-19 on relationships posed negative consequences on the mental well-being of older adults, however, few studies explore the possible moderating effects of individual differences. Past studies have observed that how important an older adult feels to others can significantly influence their mental well-being. The current study therefore focuses on the degree to which COVID-related disruptions were associated with older adults' depressive symptoms while also examining the moderating role of perceived mattering, or how important one feels they are to others. Data were collected through online surveys from a convenience sample of 137 older adults (Mage = 67.77, SD = 10.38) who completed surveys regarding disruptions in their relationships due to COVID-19 (e.g. separation from loved ones), depressive symptoms, and perceived mattering. Preliminary findings suggest that disruptions to relationships due to COVID-19 were positively associated with depressive symptoms ($r = .354$, $p < .001$), whereas perceived mattering was negatively associated with depressive symptoms at the level of a trend ($r = -.210$, $p < .001$). Our next steps are to: (1) include control variables (e.g., race, gender, work status) and (2) test the interaction between disruptions and perceived mattering. Furthermore, we will utilize a subset of qualitative data to examine differences in how COVID-19 affected relationships for older adults who reported high versus low perceived mattering. Findings from this study have the potential to aid in the understanding of how specific subgroups of older adults may be more susceptible to the negative effects of disruption to relationships than others.

Alfalah, Esam

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Grace Cunningham,
Esam Alfalah,
Krysti Knoche Gupta

Abstract Name: Student Organizations as a Means to Effectively Develop Safety Culture Within Undergraduate Chemistry

Safety education for college-level chemistry labs can be adequate for minor incidents of broken glass and small spills, but the chemical industry and graduate programs are often under the scrutiny of environmental health and safety departments that have far more stringent requirements than an average undergraduate student will encounter. Students who graduate with a bachelor's in chemistry often find themselves with a job where chemical hygiene is practiced at a level they aren't used to. Considering the professional and personal implications that poor adherence to chemical safety can have, more could be done at the undergraduate level to develop the skills and mindset associated with chemical safety. The Chemistry Student Safety Team (CSST) is a student-led, mindset-focused organization working to foster a safety culture at UWEC. The CSST is mentored by UWEC faculty and the UMN-Twin Cities Joint Safety Team (JST). The CSST uses safety demonstrations, awareness campaigns, PPE sales, and safety themed merchandise to promote safety culture. To track attitudes in the UWEC department of chemistry, the CSST uses an annual safety survey along with a system to report near miss incidents anonymously. Student safety organizations at an undergraduate level are an innovative way to promote safety-culture through peer education. With faculty support, student-led safety organizations such as the CSST can be an integral part of disseminating safety information to other students within undergraduate chemistry programs. Involving students in education and safety initiatives at an undergraduate level can lead to more effective researchers, more productive employees, lower organizational costs, and a more safe and equitable learning environment.

Alfonso, Angelo

Institution: ***WA - Seattle University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Wan Bae *Linh Le* *Angelo Alfonso*
David Stanko

Abstract Name: Improving the Classification Performance on Small-Sized and Imbalanced Datasets

Predicting rare but high-impact events is critical in many medical applications, such as health risk prediction and disease diagnosis. While sensor technology has improved rapidly in the last decade, machine learning (ML) techniques for the prediction of rare events lag behind general prediction models. Most optimization techniques used to train ML models implicitly assume a balanced distribution of events in training data. This research focuses on improving the performance of classifiers on imbalanced and small-sized individual asthma patient datasets using oversampling techniques, as these issues significantly affect medical datasets in healthcare applications. Imbalanced data causes the classifier to be biased toward the class with more data samples (the majority class), reducing its accuracy for minority class data. The class imbalance problem is particularly challenging in the medical domain because the goal is to predict whether a patient is at risk for a particular disease. However, these cases are often in the minority class. Moreover, machine learning-based classifiers require a large amount of data to be adequately trained. Therefore, having a small-sized training dataset is also an obstacle because it hinders the classifier's performance. To improve the performance of prediction models on imbalanced and small-sized asthma patient data, we first investigated existing synthetic minority oversampling technique (SMOTE) variants at the data level. SMOTE variants solve the class imbalance problem by generating synthetic data samples and adding them to the minority class data until the classes are balanced. We proposed three new minority oversampling techniques: Incremental K-Means Clustering (IKC), SMOTEBoost and SMOTEBoost with Control Coefficient (SMOTEBoost and SMOTEBoostCC), and Average Neighbor Vector Oversampling (ANVO). We evaluated the effectiveness of the proposed techniques compared to the existing SMOTE variants. The evaluation results show that the proposed methods are comparable with state-of-the-art oversampling methods.

Alford, Isabel

Institution: ***GA - Kennesaw State University***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Isabel Alford

Abstract Name: Pre-Code Versus Contemporary Female Screenwriters: Working Towards More Authentic Depictions of Women on Screen

Even in the 21st century, movies have remained an integral part of American pop culture, and while methods of consumption have changed, millions of Americans still flock to theaters every year. So why is it that, even in 2022, Americans are not proportionally represented in film? In today's world, there is a lack of adequate representation of women in film. While there may be more characters who are women than there were in the past, the depictions of women are not always the most accurate. The solution to this ever-present issue in the industry is hiring more women as directors, executive producers, producers, and/or writers, as this increases the likelihood of films portraying women more authentically. Although there were few in number, pre-Code female screenwriters such as Lorna Moon and Dorothy Howell wrote films with daring and realistic depictions of women during a time that was characterized by male dominance. This change from the status quo for female characters sent a ripple through the film industry that can be seen even in films today. Contemporary screenwriters such as Phoebe Waller-Bridge and Diablo Cody carry on the legacies of both Moon and Howell in that they too write more authentic female characters and challenge how society views women today. Although the stories in contemporary films may be different than pre-Code films, the women written by these female screenwriters are very similar and act as lifelines for young girls who are used to seeing the same stereotypical woman in every film they see. Although film has evolved greatly over time, unfortunately, the industry still struggles with its representations of women. However, it's screenwriters like Waller-Bridge and Cody who are trying to change this and are working upon the foundations the pre-Code female screenwriters built in the early Hollywood era.

Alhamdani, Abraham

Institution: ***KY - University of Kentucky***

Discipline: Nursing/Health Science

Author/Contributors:
Abraham Alhamdani
Madison Counsil
Jordan Hinton
Tammy Stephenson
Kendra OoNorasak
Micaila Oberle
Leah Gardener
Isabel Ashley
Morgan Van De Velde
Makenzie Barr

Abstract Name: Assessing College Food Security Status and Perceptions of Student-Led Weekly Meal Program Attendees during the COVID-19 Pandemic

The COVID-19 pandemic initially disrupted food access across the U.S., leading to increased food insecurity in many at-risk groups. College students particularly have faced a disproportionate risk of inadequate food access while 40% of edible food is wasted annually. Since 2018, the Campus Kitchen at the University of Kentucky, a student service organization that addresses food waste and food insecurity issues, has developed a model program, Farm to Fork (F2F), to serve healthy weekly lunches using recovered food and provide educational resources to college students. F2F attendance was tracked at every meal and attendees were invited every semester to complete an anonymous online survey that assessed food security (FS) status of students utilizing the program, categorized as high/marginal, low, very low FS groups through the validated USDA six-item FS Survey, and determined attendees' perceptions of F2F using the 18-item Likert program evaluation scale. Chi-square test was used to compare differences in FS status between the 2020-2021 academic year during which COVID-19 mandates were heavily enforced on campus and the 2021-2022 academic year in which COVID-19 mandates were lightened. Since inception, F2F has served over 7,000 meals to at least 1,500 students. Of the survey respondents during two academic years, 61.69% (n= 207) were classified as food insecure. FS status categories between the 2020-2021 (32.88% very low FS, 27.4% low FS, and 39.73% high/marginal FS) and 2021-2022 academic years (27.16% very low FS, 35.8% low FS, and 37.04% high/marginal FS) did not differ significantly (p=0.51). Over 75% of respondents agreed that F2F "improved access healthful foods", "increased fruit and vegetable intake", and "met dietary needs". These findings highlight the positive perceptions that survey respondents had of F2F and this student-led program's capability and resilience to serve the college community throughout the pandemic.

Ali, Burhan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Burhan Ali,
Stephen Coffey,
Michael Brandt,
Aya Abdrabbo,
Anna Berthiaume,
Sudeep Bhattacharyay

Abstract Name: To Probe the Conformational Fluidity of the Intrinsically Disordered Protein GTPase HRas using Molecular Dynamics Simulation

GTPase HRas is an enzyme that is linked to bladder and thyroid cancers. It belongs to the group of intrinsically disordered protein, which lacks definite protein structure. Their conformational fluidity allows them to adopt various structural forms making them efficient biomolecules. However, their three-dimensional structure is difficult to ascertain because the disorder prevents an ordered crystalline structure to form. Therefore, the role of their folding-unfolding dynamics on function, especially the effects of other biomolecules, has remained poorly understood. In the present study, the conformational changes of GTPase HRas have been investigated in the presence and absence of crowders using classical mechanics-based molecular dynamics simulations. Protein data was acquired from Alphafold - the artificial intelligence-aided protein structure database. Subsequently, the atomic coordinates of the protein were used to prepare five different simulation systems: water as a control, ethylene glycol, and three types of polyethylene glycol crowders of varying molecular weights ~ 600 Da, 8 kDa, and 20 kDa. Results will include 50 ns molecular dynamics simulation data, used for illustrating the effects of these crowders on the conformational dynamics and energetics of the GTPase HRas protein.

Ali, Sarah

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sarah Ali,
Yogesh Dwivedi,
Bhaskar Roy

Abstract Name: **Title: Identification of miR-135-3p as an Epigenetic Mediator of NR3C1 Silencing in Stress**

The epigenetic role of microRNAs (miRNAs) is crucial in understanding the psychological and neurobiological abnormalities underlying numerous psychiatric illnesses. Aberrant miRNA expression and their regulation are often associated with stress related psychopathologies including major depressive disorder (MDD) and suicidal behavior. Recent observations show the impacts of specific miRNAs in inducing maladaptive changes in the hypothalamic-pituitary-adrenal (HPA) axis by targeting many stress related genes. In this study, we utilized a restraint rodent model to pinpoint the role of stress-related genes and their regulation by miRNAs in developing depression-like behavior. Of various stress-related genes (NR3C1, CRH, CRH1, CRH2, BDNF, FKBP5, and TRKB), we found that mRNA expression of the NR3C1 gene was significantly down-regulated by 45% (p=0.042) in the prefrontal cortex (PFC) of restraint rats compared with handled controls. Our in-silico prediction analysis showed interaction of miR-124, miR-504, miR-137-5p, 132-5p, miR-34a-5p, miR-425-3p, miR-20b-3p, miR-29a-3p, miR-34c-5p, miR-200a-3p, miR-18a-3p, miR-18a-5p, miR-125b-1-3p, miR-130b-5p, miR-15a-3p, and miR-135 3p with the NR3C1 gene with high confidence scores. qPCR-based expression analysis revealed significantly upregulated levels of miR-135-3p by 160% (p=.044) in the PFC of restraint rats, suggesting that miR-135-3p is involved in the post transcriptional silencing of the NR3C1 gene. The study is currently in progress using various in-vitro (miR oligo-based gain and loss of function), in-vivo (Ago2-based immunoprecipitation), RNA-induced silencing complex, and methylated DNA immunoprecipitation techniques to gain further insights into the epigenetic regulation of the NR3C1 gene by miR-135-3p to put forth their potential contributions in developing stress-related mental disorders.

Ali, Shazab

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Shazab Ali

Abstract Name: **Pothole Detection System using Deep Learning**

Asphalt roads have monopolized the streets of America since its founding, but one problem persists, potholes. Americans pay nearly $3 billion a year to repair damage caused by potholes, and this number looks to only increase over the years due to the increase in vehicles. The objective of this research is centered around creating a quick and efficient way to accurately detect potholes, in addition to making it simpler to find the areas where recurring potholes need to be reinforced with asphalt. The model is deployed over Google Street View and detects potholes over a set route making the previous way of dealing with potholes obsolete. The model implemented in this project was the SSDmobilenet. SSDmobilenet was used because it has a speed of 19 m/s with a mean average precision of 20.2 which is used to measure the recall of the model. This was slightly more accurate than the YOLO (You Only Look Once) model. For accurate results, 436 images were hand-picked out of a Kaggle dataset in order to ensure there were no images that would cause false positives in the training set. These images were then trained using the SSD model for 120,000 epochs.
When the completed model was able to accurately detect potholes on Google Street view over multiple given routes, the model reached an accuracy of 81% over a 5 -hour training period. Additionally, the detection of potholes is only a small piece of what this model is capable of. Additionally, we look into taking the detections made on Google Street View and plotting them on a Google Maps API. This will help alert drivers to where potholes are and help them choose the best route. Overall, Pothole Detection could lead to a major breakthrough in road health and safety.

Alimamy, Lucy

Institution: ***MA - Bridgewater State University***

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Lucy Alimamy,
Ana Murphy,
Nicole Munoz Ordonez

Abstract Name: Perception of Social and Physical Environmental Risk Factors Affecting Women Experiencing Homelessness: A Mixed Method Study

Homeless people in general confront many difficulties that make their lives very challenging. However, when it comes to women experiencing homelessness, those challenges can threaten their own well-being by increasing the risk of victimization and decreasing the levels of personal safety. This research project has three aims: first, to better understand the link between victimization and social and physical environment as it relates to homeless women; second, to recognize which aspects of the social and physical environment homeless women find threatening and difficult to overcome; and third, to examine the areas of conflict within the coexistence of homeless women in a mixed-gender transitional shelter. This study is based on a mixed-method approach. The data are drawn from fivein-depth interviews and from secondary survey data collected by Ozanam Manor, a faith-based agency. The qualitative analysis uses a naturalistic perspective to study homeless women in their own living settings in a transitional shelter and provides a rich, contextualized understanding of homeless women's perception of risk. We also analyze secondary survey data collected by Ozanam Manor and use correlation analyses to understand the relationship between social environments and respondents' safety perceptions.Our research goes a step further by assisting Ozanam Manor in identifying and comprehending areas for improvements, such as security and staffing, in order to better accommodate and meet the needs of the individuals of their institution, as communicated by the women in our study.

Alix, Twyla

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Twyla Alix

Abstract Name: "Probation was a great way to go": Exploring Community Corrections Officers' Professional Perceptions and Orientations

Probation/parole officer orientation has been studied in professional decision-making, but few studies have explored officers' perception of their jobs. Moreover, no research has considered how these perspectives may be connected with officers' professional orientation. Findings from this mixed method study suggest that officers value probation/parole as both a helping and law enforcement profession. Additionally, significant differences exist between why officers entered the field and which job duties they find rewarding based on their professional orientation. These findings have implications for probation/parole departments, specifically regarding recruitment and training approaches, and larger criminal justice reform efforts.

Allen, Ashley

Institution: ***OH - University of Findlay***

Discipline: English/Linguistics

Author/Contributors:
Ashley Allen

Abstract Name: The Lord's Novel: A Narratological Analysis and Interpretation of the Bible as Story

Biblical and literary scholars cooperatively examine the Bible as literature through an integration of Biblical studies and literary criticism that has grown in depth and reach. Yet most scholarship divides the Biblical text into its component parts (Alter, Ryken, Andersson) while overlooking what the whole text accomplishes as a cohesive narrative (Greenstein). This project attempts to reconcile existing scholarship on the Bible as literature with the field of narratology through analysis of the whole Bible as story. By researching and applying Biblical narratology, it traces a single, unified narrative arc through the Bible and interprets meaning from that arc. It defends the argument that the Bible has meaning as a restoration narrative when the entire text becomes a single story. Additionally, it demonstrates how this message can be missed when the text is parsed into the sum of its parts. This project argues for the beauty of the Bible's meaning as story while adding new perspective to scholarly conversations of the Bible as literature.

Allen, Elizabeth

Institution: ***WI - St. Norbert College***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Elizabeth Allen *Carrie Kissman*

Abstract Name: Monitoring Kelly Creek Health During and After Restoration

We implemented a short-term, two-year research project to measure the water quality of an urban creek undergoing restoration. We hypothesized that restoring the creek would positively impact the health of the stream by improving the macroinvertebrate abundance, water column characteristics, nutrients, and chlorophyll a.
The study contained three sites along Kelly Creek in South Beloit, IL. Site 1 and site 2 were within the restoration area of the creek. In these areas, efforts were made throughout the duration of the study to pick up trash, clean out muck, and install limestone outcroppings to increase public accessibility. Site 3 remained untreated. Data were collected in 2021 and 2022 from early May to late August approximately every two weeks. Macroinvertebrate abundance, temperature, dissolved oxygen, total phosphorous, and chlorophyll a were collected during each sampling period. Richness, diversity, and the Hilsenhoff Biotic Index (HBI) were calculated.
Preliminary results suggest that Chironomidae and Amphipoda abundance differ significantly by site. Chironomidae have a greater abundance in sites 1 and 2, the restoration area, while Amphipoda have a greater abundance in the non-restoration area. Chironomidae have a high HBI Index value, therefore their presence indicates significantly polluted water in the restoration area. Amphipoda have a lower HBI index value, which indicates that the non-restoration area has better water quality. The overall HBI index value varies significantly between sites, with site 2 showing the poorest water quality. Sites 1 and 2 contained sandy substrate which Chironomidae prefer, while site 3 contained rocky substrate which Amphipoda prefer. The process of restoration may also have temporarily disrupted the macroinvertebrate community, which may take time to recover. This study will help to aid further study and improvement of Kelly Creek and gain insight into the short-term impact of ecological restoration in polluted areas.

Allen, Emilie

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Business

Author/Contributors:
Daniel Gullifor *Rebecca Wyland* *Scott Lester*
Grace Olson *Emilie Allen*

Abstract Name: More than one victim: The mediating role of envy in the impostor phenomenon-workplace deviance relationship

Those who experience the impostor phenomenon (IP; Clance; Imes, 1978) believe they have tricked others into believing they are more competent than they believe themselves to be, and they fear being exposed, despite impressive records of achievement. While most research presents those who experience IP as victims to be pitied, little research has considered the dark side of IP and the lengths those who experience it will go to avoid discovery. The purpose of this study is to fill this gap and examine the dark side of IP.HypothesisDrawing on conservation of resources theory (COR; Hobfoll, 1989), we hypothesize that IP is positively related to both episodic envy (EE; Duffy at al.,2021) and interpersonal workplace deviance (IWD; Bennett; Robinson, 2000). Next, we hypothesize that EE is positively related to IWD. Finally, building on our previous hypotheses, we expect IP to have an indirect, positive effect on IWD through EE.MethodWe collected survey data across three time periods utilizing Amazon's Mechanical Turk (MTurk; Burhmester et al., 2011), with IP and control variables (gender, age, race, and ethnicity) collected at Time 1, EE at Time 2, and IWD at Time 3. There was a minimum of 14 days between each wave of collection, and our final matched sample included 119 participants.FindingsUtilizing Preacher and Hayes' (2008) mediation procedure, our results provide support for our hypothesized positive relationships between IP and EE (B = 0.9699, .001) and between EE and IWD (B = 0.4283, .001). We found no direct effect of IP on IWD, however, we did find a significant indirect effect of IP on IWD through EE (b = .4154, SE = .1113, 95% CI [.2005, .6403]), suggesting full mediation and providing broad support for our hypothesized model.

Allen, Emily

Institution: ***IA - Iowa State University***

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Emily Allen,
Danica Ommen,
Alicia Carriquiry

Abstract Name: Statistical Analysis of Kinematic Measurements on Signatures for Forgery Detection

Can we tell whether a digitally-captured signature is authentic or forged? To address this question, data is obtained with a software called MovAlyzeR® to capture the "on-line" movement and pressure aspects of a signature as it is written on a digital signature pad. This technological aspect makes the MovAlyzeR® system critical as more signatures are written electronically over time and as more electronic signature pad owners decide to store its data. The MovAlyzeR® system records various information about a signature as it is written. The signatures are decomposed into strokes, and each stroke's qualities are analyzed. The variables collected include size, duration, velocity, jerk, and pressure. A multivariate statistical method called the Hotelling's T-Squared Statistical Test is used to compute test statistics for pairs of genuine and forged signature exemplars. The resulting score is a metric for predicting forgery that can be interpreted as a dissimilarity score because it will be large when the pair represents a forgery and small when the pair represents a genuine comparison. The corresponding test statistic scores for the known genuine comparisons are used to approximate the known-match score distribution via kernel density estimation and similarly for the non-known-match distribution under each forgery condition. Then, the test statistic is computed and compared to each reference distribution for each new comparison. The ratio of these two values is the score-based likelihood ratio, which is a statistically based objective method for assessing the value of evidence towards forgery. It can be used independently or to supplement other objective or subjective questioned document examination methods.

Allen, Sommer

Institution: *NC - Western Carolina University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sommer J. Allen,
Martin L. Tanaka,
Adam Harris

Abstract Name: Soil Moisture Sensor

Indoor self-watering systems make it easy to have an indoor garden with low maintenance. The main goal of the self-watering system was broken into three parts: the moisture sensor, data processing, and triggering the water pump. The goal of the soil moisture sensor component of this research project was to design a working sensor to test soil humidity of an indoor house plant. The project was built using six jumper cables, a soil moisture sensor, a relay board, and an Arduino Uno. The soil moisture sensor was chosen after extensive research pertaining to soil moisture sensors and self-watering systems. Multiple professors were consulted to ensure that the Arduino was programmed correctly and to ensure that the soil moisture sensor was set up successfully. When the components from the original planned design were unavailable, the design team became innovative to acquire usable components and modify the design to still meet the goals of the project. Some of the testing that was done to see if the soil moisture sensor worked included comparing results when the soil moisture sensor is wrapped in a wet napkin versus when the soil moisture sensor is laying on top of a dry napkin. The moisture value of the soil is mapped to a scale of 0-100% based on the extremes recorded from the napkin tests. The sensor was also tested on a Jade plant, Moonstone plant, and a Curry Jade plant. When the sensor was first placed in the soil, it read between 27 and 28%. 50ml of water was placed in the soil and after 5 minutes the sensor read between 50 and 63% depending on where the sensor is placed in the soil. The device worked as expected and the subsystem is ready to integrate into the overall system design.

Allridge, Melanie

Institution: *UT - Southern Utah University*

Discipline: Theatre and Dance

Author/Contributors:
Melanie Allridge

Abstract Name: Exploring Trisha Brown's Methodical Approaches to Choreography

When it comes to Trisha Brown, most people in the modern dance community know who she is, or they know of her because of how iconic she was when exploring new movement ideas in modern dance. She seemed to lead the evolution of modern dance for decades throughout her career, and almost every new work she presented was ground-breaking. The question is then, what about Brown's approaches made her outcomes so successful at each point in her career? To name a few of her approaches, Brown used internal rhythms, postmodernism, accumulations, Locus (her famous cube), and intense examination of musical scores to create her works. Brown created her own choreographic devices and combined them with improvisation and trial and error to create her works. Oftentimes, she had to write down or draw her new concept on a piece of paper before being able to translate that idea into her dancers' bodies. Although each of her approaches was unique and different from the next, I primarily used an interview I conducted with one of Brown's dancers, Mariah Maloney to uncover Brown's recipe for success. This interview, coupled with primary and secondary information from books, performance reviews, and peer-reviewed articles, led me to find one prominent theme between all of Brown's processes. Brown always kept her dancers' abilities in mind when creating a new work, which brought a sense of comfortability that showed from her dancers. Through this research, I hope to help other choreographers utilize Brown's way of working to find success in their own processes.

Almeida, Aliya

Institution: *MA - Bridgewater State University*

Discipline: Mathematics

Author/Contributors:
Aliya Almeida

Abstract Name: **The Use Of Social Media During The Pandemic**

Nowadays billion of people use social media platforms as a way to keep in touch with family and friends, fill spare time, find content, find inspiration for things to do and buy, share and discuss opinions with others, and the list goes on. This project focused and investigated on the use of social media during the years, in particular during quarantine/lockdown. Utilizing the public source data, I explored several research questions including how many hours people spent on social media, the popularity of social media apps, as well as what age group uses social media platforms (teenagers, young adults, adults). After data cleaning, the data visualization followed, and multiple dashboards were created using Tableau; the data analysis was mainly completed in R. The findings and analysis results were also presented in this research.

Alper, Pryanna

Institution: *KY - Centre College*

Discipline: Education

Author/Contributors:
Pryanna Alper,
Javier Cantu

Abstract Name: **Education Students' Understanding of Scale and Geometric Space of the Earth, Moon, Sun System and Cause of Moon Phases**

This sequential explanatory mixed methods study examined how well pre-service teachers and education students understand the Earth/Moon/Sun scale, motion, and orbital geometry necessary to observe various lunar phases from an Earth-based perspective. Research has shown that students have great difficulty understanding the cause of lunar phases with many incorrectly explaining the phases are caused by the Earth's shadow, the Sun's shadow, or an object blocking the Sun's light (Wilhelm et al. 2018; Plummer et al. 2010). The research question investigated was: What understandings do students have about the Moon and its phases, and how do their lunar conceptions relate to their spatial ability? This question was explored with undergraduate education students from two institutions in the south-central United States. Quantitative data consisted of 72 participants completing a modified Lunar Phases Concept Inventory (LPCI; Lindel, 2002) with 25 multiple-choice questions. To better understand students' lunar-related spatial-scientific thinking, we followed the quantitative data collection with select student interviews (high, low LPCI scorers) using a semi-structured protocol concerning Earth/Moon/Sun geometry, lunar motion, and why the Moon appears different at different times. The LPCI findings showed that approximately 59.3% of students held the Earth-shadow misconception, 9.4% had an object-blocking explanation, 3.1% had the Sun-shadow explanation, while 28.2% had the scientific explanation when describing the cause of phases. We also found that 18.8% of students did not correctly understand the scale of the Earth/Moon/Sun system (e.g., distance between Earth and Moon) with many believing the Moon to be much closer to Earth than it is, which could be a possible reason students tend to hold shadow and blocking notions. Similar to the LPCI, interview results showed general misunderstandings of why lunar phases occur, with some participants not able to correctly sketch various phases, nor accurately explain the Earth/Moon/Sun geometry for particular phases.

Alpern, Emma

Institution: *IA - Wartburg College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Emma Alpern

Abstract Name: **The relationship between personality and problematic binge-watching behaviors in college students.**

Purpose: Relationships between Big Five personality traits and problematic binge-watching behaviors were investigated. Binge-watching TV may be potentially addictive, causing problematic watching behaviors (Flayelle et al., 2019). Introverted people are more likely to excessively use media (Kircaburun et al., 2018). Increased social media usage occurs with high introversion and neuroticism; as well as low openness, conscientiousness, and agreeableness (Sindermann et al., 2020). These relationships are useful to infer a similar relationship between personality traits and problematic binge-watching behaviors. Escape from negative stimuli is the strongest motivating factor to binge-watched television (Starosta et al., 2020). Based on evidence from Kircaburun et al. (2018), Sindermann et al. (2020), and Starosta et al. (2020), I hypothesize 1) those who are high on introversion and neuroticism will have more problematic binge-watching behaviors, and 2) those who are high on agreeableness, conscientiousness, and openness will have less problematic binge-watching behaviors.
Procedure: The preliminary sample consisting of 32 college students completed the following scales: Binge-Watching Addiction Questionnaire (Forte et al., 2021), Big Five Inventory (John & Srivastava, 1999).
Results: Pearson product-moment correlation procedure was used to examine the relationship between the personality traits and binge-watching scales. Negative significant relationships between conscientiousness and binge-watching dependency, (r (31) = -.425, p = .014), and between agreeableness and binge-watching dependency (r (31) = -.388, p = .026) were found. No other relationships were significant.
Conclusions and implications: Hypothesis 1 was not supported, contrary to the findings of Kircaburun et al. (2018). Hypothesis 2 was supported, where conscientiousness and agreeableness were negatively related to binge-watching, similar to the findings of Sindermann et al. (2020), but openness was not. These findings are important for children as they continue to use social media and streaming services to watch television. Future studies should examine the cause of problematic binge-watching behaviors.

Al-Rizzo, Aisha

Institution: *AR - University of Arkansas*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Aisha Al-Rizzo *Patience Okoto* *Dr. Suresh Kumar*

Abstract Name: **Design of a Novel Decoy FGF2 with Increased Stability and Cell Proliferation Activity**

FGF2 is a multifunctional growth factor, part of the highly conserved superfamily of fibroblast growth factors. In particular, FGF2, found in embryonic and adult cell types, plays a significant role in the development and function of multiple organ systems. Furthermore, FGF2 plays roles in angiogenesis (blood vessel formation) and wound healing, which show promise in medical applications and tissue engineering. Although promising in its potential, wild-type FGF2 itself poses issues of inherent instability, which affect its overall function. By generating a recombinant protein, consensus, or "decoy" FGF2, the problem of instability in wild-type FGF2 can be solved. Consensus FGF2 can help in creating a more stable protein, thus improving function over time, as structure correlates to effectiveness in function. By eradicating this issue, a higher stability in FGF2 can be applied to biochemical and medical industries, to name a few. For example, thermal instability wouldn't be an issue with a more stable FGF2 protein when considering external factors, such as the supply chain when transporting for further biochemical research and medical applications. Thermal stability, as found in preliminary results, also indicates a longer shelf life, if used in potential medical applications. Overall, the aim of this project is to improve the stability of wild-type FGF2, a potent but unstable fibroblast growth factor, thus improving its function via experimentative methods of small-scale and large-scale expression, purification, and characterization of structure and stability. In short, the goal of the experimental design is to compare cell proliferation activity of wild-type FGF2 and consensus FGF2 with analyses of structure and function. The ability to solve the problem of instability, which was already suggested via initial findings, in FGF2 by fabricating a more stable and functional growth factor can open new doors for further research and breakthroughs in the fields of biochemistry and medicine.

Alsiyami, Afnan

Institution: ***WI - Alverno College***

Discipline: Biology

Author/Contributors:
Afnan Alsiyami,
Alex Blom

Abstract Name: Determination of Nickel's Effects on Wisconsin Fast Plant

Nickel (Ni) is an important nutrient for plants that plays a role in urease activity, an enzyme essential for the metabolism of nitrogen. The uptake of N and carbon (C) during leaf development is also interfered with by a lack of Ni. Previous work demonstrated that Ni water solution between 0.1ppm and 10ppm promoted Wisconsin Fast Plant growth versus control water and had a positive impact on plant health. The current study continued this study using seeds, rather than established plants, and combined chemical and biological methods to examine plant growth. The experiment was conducted in our on-campus greenhouse. Five standard concentration solutions of Ni were produced, 0.1-ppm, 1-ppm, 5-ppm, 10-ppm, and 12-ppm and added to the plant seeds. Each concentration and a control containing 0 ppm of Ni, was watered on 24 seed samples. Seeds were watered every 3 days, and containers were filled by appropriate water twice a week. The third procedure used FLAME Atomic Absorption Spectrometry (FLAA) to demonstrate the concentration of Nickel in the soil measured at 0.02 ppm. Plant growth was measured using plant height, the rate of growth, the number of blooms and the number of leaves. The results show that the control group grew tallest, and the 5-ppm group grew slowly. However, the 5-ppm had the most bloom number, and the 0.1 ppm had the lowest number of blooms. The 12-ppm had the most leaves number, and the lowest number was for 10 ppm. In conclusion, Ni did not demonstrate consistency in growth rate, number of leaves, or number of blooms, on the Fast Plant as expected. In the future, the effect of Ni on plants from a store or using a Ni solution spray will be explored.

Alsuhaibani, Omar

Institution: ***VA - George Mason University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Omar Alsuhaibani *Amer Elsana* *Lina Hussein,*
Nathalia Peixoto

Abstract Name: Music and Emotions: The Effect of Computer-Generated and Commercially Available Music on Human Emotions

The use of background music while completing mentally stimulating tasks has recently gained popularity. What gives music its potential to improve learning outcomes has to do with characteristics like tempo and tone. This research investigated the changes in EEG signals under numerous experimental conditions: silence, 3 ascending tempos of commercially available music, and 3 ascending tempos of computer-generated music with two different genres: classic and modern. The order in which music was played was randomized for each participant. The first three trials used commercially available classical music across 3 tempos: slow, moderate, and fast. The other six trials used computer-generated music to test each of the following modern and classic music genres: calm, stimulus, and focus. During testing, brainwave activity and heart rate were measured by the means of electroencephalography (EEG) and electrocardiography (ECG) respectively. The Muse 2 headband from InteraXon was used to measure alpha, beta, theta, delta, and gamma waves using four different channels. The E4 Empatica wristband measured heart rate throughout the different music tests as a parameter to indicate if spikes in brain activity can have a direct effect on heart rate. The results indicated that different types of commercially available music had an overall higher power spectral density than that of computer-generated music. This suggests that brain activity was stronger when listening to commercially available music. With the computer-generated music, all the Muse 2 channels were synchronized with one another in terms of brain activity. This indicates that computer-generated music has the effect of causing identical activity in terms of power spectral density, while showing spikes at frequencies in the front and back areas of the right and left hemispheres of the brain. The testing of computer-generated music was used to examine the frequencies to see if the music piece evokes the intended emotion.

Alt, Antonio

Institution: *VA - George Mason University*

Discipline: Physics/Astronomy

Author/Contributors:
Mario Gliozzi,
Antonio Alt

Abstract Name: **Testing the M-? correlation for determining the black hole mass in Type II Active Galactic Nuclei**

According to General Relativity, all the information about a black hole can be derived from just the mass and its angular momentum (charge as well but we assume it is electrically neutral). It is therefore important to have accurate measurements of the black hole mass. In this research project we investigated the masses of black holes within Type II (i.e., obscured) Active Galactic Nuclei (AGN) calculated using the M- σ relation, a correlation between the black hole mass and the galaxy bulge frequently used when direct dynamical methods are not available. We started from a sample of AGN selected from the hard X-ray sky survey done by the Neil Gehrels Swift Observatory, restricting it to X-ray sources with luminosity greater than 1042erg/s and within 40 Mpc. These filters brought our sources down to 20 AGN. From the literature, we collected the black hole mass values obtained with dynamical methods (Maser, Virial Theorem, Stellar/Gas Dynamics) and compared them to the values measured using the M- σ relation. Our preliminary results suggest a substantial discrepancy between the black hole mass values measured with M- σ and the ones inferred with more direct measurements, indicating that the use of the M- σ relation for Type II AGN may be problematic and must be treated with caution.

Alvarado, Naomi

Institution: *MI - University of Michigan*

Discipline: Psychology/Neuroscience

Author/Contributors:
Naomi Alvarado *Diondra Straiton* *Brooke Ingersoll*

Abstract Name: **Impact of Provider Demographics, Previous Training, and Consultation on Provider Perceptions of a Parent Coaching Intervention Delivered in the Medicaid System**

Background: Little is known about factors that influence providers' perception of evidence-based practices.
Objectives: Investigate how provider demographics, training experiences, time, and consultation impact perceptions of Project ImPACT, a parent-coaching intervention for autism.
Methods: 16 providers received consultation about Project ImPACT. Two-level multilevel models examined the effects of provider demographics and training experiences on perceptions of Project ImPACT over time and with consultation. Providers completed the Perceived Characteristics of Intervention Scale weekly.
Results:
Relative advantage (RA). For those who had taken a course related to parent-coaching, average baseline (BL) RA ratings were 1.15 points lower in consultation period than BL, $t(7.66) = -3.56$, $p = .007$. There was a significant association between observing parent-coaching outside of practicum and ratings of RA, $t(8.96) = 2.44$, $p = .04$; clinicians with that training rated Project ImPACT as .67 points more effective than other therapies from BL to consultation period. There was also a significant interaction between time and condition, $t(251.98) = 2.95$, $p = .01$. Ratings increased during the BL by .03 points each week, $t(249.94) = 4.98$, $p < .001$. Ratings in consultation period did not significantly change.
Compatibility. The association between taking a course in parent-coaching and ratings of compatibility was similar to results for RA (see Table 1). Overall, ratings decreased each week by .05 points, $t(259) = -2.48$, $p = .01$. The interaction of time X condition was also significant, $t(257.84) = 3.38$, $p < .001$. Ratings in the BL period increased each week by .02 points, $t(252.41) = 2.96$, $p < .003$. Ratings in consultation period decreased by .05 points each week, $t(259) = -2.48$, $p = .01$.
Conclusions: Taking a course and observing parent coaching affected clinician ratings from BL to consultation period. Consultants should consider this when supporting clinicians to use a new intervention.

Alvarez, Diana

Institution: *IL - Northern Illinois University*

Discipline: Biology

Author/Contributors:
Diana Alvarez,
Virginia Naples

Abstract Name: **Who bit Smilodon? A tale of attempted murder at Rancho La Brea**

Direct evidence for interaction among extinct species is difficult to obtain because the animals no longer interact. Fossil specimens are often incomplete because most soft tissues have been lost, or show damage. Therefore, conclusions regarding what any animal did may be impossible to determine. A proxy for interpreting behavior can be achieved, however, if it is possible to identify physical traces left by animals interacting while they were still alive. There are many different types of traces. These include skin and organ impressions, tracks, scratch and other kinds of marks from claws or teeth left in impressionable substrates and scars in skeletal elements of fossils. These latter are often attributed to bites from other animals, whether conspecifics or not. This study identifies which species interacted with the Smilodon fatalis individual represented by the skull found at Rancho La Brea, the tar pit in Los Angeles. This individual shows a hole in the outer surface of the frontal bone on the left side that could be a bite mark. To determine whether this is correct we examined the other species found in the same location. Taxa that could have bitten our specimen include Arctodus simus, the short-faced bear, other Smilodons, Canis dirus, the dire wolf, and Panthera atrox, the American jaguar. For each of these species we examined the overall size, length, degree of anterior and posterior curvature and anteroposterior and mediolateral thickness of the canine teeth. The goal was to determine which, if any of these teeth, fit the hole in the skull.
We discovered that only a moderately worn upper right canine tooth of an individual of P. atrox fit the defect in the skull well. This tooth matched the diameter and shape of the opening perfectly. We therefore are able to conclude that an American jaguar bit Smilodon.

Alvarez, Laura

Institution: *TX - San Jacinto College*

Discipline: Education

Author/Contributors:
Martha Jimenez,
Katherine Valero,
Maya Vazquez,
Carmen Rodriguez,
Myrim Cepeda,
Laura Alvarez

Abstract Name: **Education System Vs. Undocumented Students**

The American education system is made to provide students access to a bright future; however, for undocumented students that is not the case. The research below will show that the system has limited their ability to experience a system that those who are documented have access to. Due to this, undocumented students face issues related to their mental health, emotional well-being, lack of access to resources, racial injustice, and effects on household. The lack of solutions has led to an unequal education system; however, there is nothing being done to come up with solutions. Although there are holes in education, teachers and those of higher power are not taking the time to understand all that these students face. Undocumented students are left to face these struggles on their own, ultimately setting them up for failure. While some students have the help of DACA, Deferred Action for Childhood Arrivals,they are still limited when receiving an education. Limitations should not exist when it comes to an education that will be their door to an unlimited future. Their fear of getting deported leads to unattended emotional and mental issues (Lad, 2013). Their fear of an incomplete household leads to an unfocused school career (Rangel, 2022). Their lack of resources leads to unreachable goals (Terriquez, 2015). The struggles of others' stereotypes lead to an unfair pathway to success (Lopez,2018). While many think there is only one pathway of education, that pathway comes with many obstacles for undocumented students. The education system has given undocumented students opposition, which is why we decided to bring light to this issue.

Alzufari, Amber

Institution: ***AR - University of Arkansas***

Discipline: Psychology/Neuroscience

Author/Contributors:
Amber Alzufari,
Michelle Ramey,
Grant Shields

Abstract Name: The Associations Between Early Adversity, Recent Life Stress, and Disordered Eating Habits

Research has shown stress can have extremely adverse effects on a both mental and physical health as seen with a wide array of illnesses such as depression, anxiety, cardiovascular disease, and autoimmune disorders. Compared to the aforementioned disorders, however, relatively little work has examined how stress might detrimentally affect eating behaviors which can in and of itself contribute and coincide with a myriad of health issues such as obesity (which often leads to its own slew of health ailments) and eating disorders (including but not limited to anorexia nervosa and bulimia). This study analyzes whether early adversity stress exposure and recent life stress exposure additively or interactively relate to disordered eating behaviors in a sample consisting of 260 male and female college-aged participants. This was done using multiple self-reported measures; such measures include the Eating Attitudes Test (EAT), the Dutch Eating Behaviors Questionnaire (DEBQ), and the Stress and Adversity Inventory for adults (STRAIN). These measures were then be analyzed to determine whether any sort of significant association could be established between eating behaviors and early adversity and recent life stress through potentially additive or interactive relationships. Contrary to original belief, early adversity and recent life stress worked interactively to constitute a correlation with certain eating behaviors. This finding will perhaps prove useful as discussions on potential treatment plans for the aforementioned ailments that are often spurred by disordered eating behaviors continue.

Amann, Kirsten

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Kirsten Amann

Abstract Name: Refining the Timeline of Indigenous Occupations at Frog Bay Tribal National Park

The Middle Archaic period in Wisconsin (5,000 years ago) was a time of warming climate, new technologies, and changing lifeways. On the shore of Lake Superior there sits an archaeological site (47BA60) at Frog Bay Tribal National Park in Red Cliff, Wisconsin. This site gives us a glimpse into the past to understand what life was like for the Indigenous people of that time. By acquiring and analyzing new radiocarbon dates from this site my research works to refine and understand the timeline of occupations there and expand our knowledge of the Middle Archaic period in Northern Wisconsin. The results of this radiocarbon analysis also provide a greater understanding of Anishinaabe cultural history and past lifeways on the land that is now the Red Cliff reservation. All information gathered for this research is done in collaboration with the Red Cliff Nation and will be provided to their Tribal Historic Preservation Office so that it may be used to educate the public and inform future archaeological investigations. By working directly with the tribe, indigenous knowledge and input plays a major role in the research. This method called Collaborative Archaeology prioritizes tribal resources and wishes to do arcaheology as culturally responsibly as possible.

Amaya Rapalo, Nikki

Institution: *MN - Hamline University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Nikki Amaya Rapalo,
Fadumo Bashir,
Ayden Chapman,
Betsy Martinez-Vaz

Abstract Name: **Investigating the Effects of Mutations R130E and D132N in the Catalytic Activity of Malate Dehydrogenase**

Malate dehydrogenase (MDH) is an enzyme that plays an important role in several metabolic pathways such as the tricarboxylic acid cycle (TCA) cycle. The TCA cycle is the primary source of cellular energy and it plays a critical role in aerobic respiration. This research looks at the reversible redox reaction catalyzed by MDH where malate is oxidized and NAD+ is reduced to form oxaloacetate and NADH. The purpose of this research is to investigate the effects of MDH mutations D132N and R130E and observe how those mutations might affect the catalytic activity of this enzyme. We hypothesized that these mutations would lower MDH's specific activity due to the changes in the overall net charge of the amino acids which could impact interactions with the substrate at the active site. To test the hypothesis, the wild-type and mutant enzymes were purified using His-tag affinity chromatography. Enzyme activity was monitored with a spectrophotometric assay that follows the disappearance of NADH at 340 nm. The results showed that the mutation at position 130 (R130E) abolished enzyme activity. In contrast, the D132N mutation had a 33% reduction in activity compared to the wild type. These findings suggest that the arginine and aspartate residues at positions 130 and 132 in the MDH loop play an important role in substrate stabilization and catalysis. Future work will focus on studying the effects of the R130E and D132N on MDH substrate binding (Km) and specificity.

Ambardekar, Harsh

Institution: *CA - Aspiring Scholars Directed Research Program*

Discipline: **Physics/Astronomy**

Author/Contributors:
Vineet Rao *Harsh Ambardekar* *Alexander Lau,*
Sanjay Ravishankar *Christopher Lau* *Robert Downing*

Abstract Name: **Analysis of Stellar and Exoplanetary Attributes to Determine the Feasibility of Carbon Based Life in Exoplanets**

Over the past few decades, the search for a counterpart to Earth has only increased in prominence, with reliable data from satellites such as Gaia and datasets like the NASA Exoplanet Archive providing more possibilities for habitability than ever before. Searching for habitable exoplanets is crucial because it gives us insight into the early history of our solar system and potential theories of primitive life formation on Earth. The main criterion for an exoplanet's habitability is its ability to host liquid water. This depends on many characteristics unique to each exoplanet and its host star, all of which must work together to create an environment capable of sustaining carbon-based life as we know it. Our research aimed to analyze the habitability of the exoplanets in the NASA Exoplanet Archive by determining if the exoplanets resided within their host stars' circumstellar habitable zone (CHZ). To accomplish this, we first removed entries considered controversial or redundant to ensure accuracy in our data. We then calculated each host star's bolometric luminosity to determine the inner and outer bounds of its CHZ and see if its exoplanet was within the region. We hypothesized that all of the exoplanets we found to be habitable would have eccentricities less than or equal to 0.4 and host stars with surface temperatures less than or equal to 7500 K. Based on our results, all of the exoplanets we deemed habitable had host stars with temperatures less than or equal to 7500 K; however, some had eccentricities greater than 0.4, thus disproving our hypothesis. We then compared our data with the NASA Planetary Habitability Laboratory (PHL) Dataset and found three exoplanets in common: Kepler-1649c, Kepler-174d, and Kepler-62f. Furthermore, our results yielded an extra 50 exoplanets as potential contenders for habitability in addition to NASA's findings.

Ames, Kendra

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Communication Science and Disorders

Author/Contributors:
Kendra Ames,
Grace Weber

Abstract Name: Do You See Your Bias? An Accent Perception Study

Accents are an important social stimulus that influence how we form groups and interact with others. The purpose of our study is to identify variables that influence accent perception. Meltem et al. (2019) found that demographic categories such as gender, skin color, and physical features can influence accent perception. English speakers listened to recordings from non-native English speakers presented with different images and rated their accent in a Qualtrics survey on a scale from 0-10 (following Cal State LA and the University of Wisconsin-Whitewater's IRB guidelines). They answered demographic and language background questions. A one-way repeated measures analysis of variance was conducted to identify differences between the ratings for each image. A statistical significant difference between conditions was found. The results indicate that visual stimuli have an effect on accent perception; foreign accent ratings were higher when a Latinx person was presented with the audio. These results show how physical traits influence accent perception, therefore accent should be understood as a bidirectional relationship between the speaker and listener.

An, Shuhua

Institution: *CA - California State University - Long Beach*

Discipline: Education

Author/Contributors:
Shuhua An,
Julianna De Joya,
Joshua Ortega

Abstract Name: Analyzing Interdisciplinary Teaching on Utilization of Math and Health Children's Books to Support Diverse K-8 Children?s Math Learning in Urban Classrooms

This project aimed at 1) analyzing pre-service teachers' interdisciplinary teaching using math and health children's books and 2) identifying difficulties and challenges in a diverse learning environment with this interdisciplinary approach in urban K-8 classrooms in Southern California. About 78 pre-service participants from three math method classes participated in this study. Data collection includes pre- and post-questionnaires that assess their disposition and knowledge of interdisciplinary teaching, their creation of math and health children's books, and their reports of fieldwork teaching from the children's books. Data analysis includes both quantitative and qualitative methods. Quantitative methods were used to analyze the differences in pre-service teachers' disposition, knowledge of interdisciplinary teaching, children's math skills, health awareness and their disposition toward STEAM learning. Qualitative methods were used to analyze the approaches of interdisciplinary teaching used by the pre-service teachers, and to analyze the difficulties and challenges in a diverse learning environment. The preliminary analysis shows that the pre-service teachers were able to use a variety of ways in teaching math and health children's books in their fieldwork, and, as a result, their knowledge of interdisciplinary teaching and disposition were improved. There are some difficulties and challenges in children's learning: suggestions were identified for more effective interdisciplinary teaching, such as using manipulatives and teaching vocabularies before reading.

Anastasio, Karris

Institution: *TN - Trevecca Nazarene University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Marissa Hamilton,
Karris Anastasio

Abstract Name: **Relationships Between Insomnia, Stress, and Perceived Daytime Impairment**

The life of a college student is one filled with assignments, tests, work, and a social life squeezed in. During this time, sleep is often neglected as a necessity or even unattainable for some students. Students do not realize how much of an effect sleep can have on their perceived daytime impairment. Stress also seems to have a large correlation with recurring lack of sleep. After completing literary research, a variety of hypotheses concerning insomnia and other sleep issues, stress, and perceived daytime impairment were made. It is hypothesized that insomnia scores will be positively correlated with stress scores; that perceived daytime impairment scores will be positively correlated with stress scores; and that insomnia scores will be positively correlated with perceived daytime impairment scores. One hundred and seven undergraduate students at a small, private university in the southeast participated in a survey to study the correlation between these three variables. The following instruments were administered: Bergen Insomnia Scale, Sleep Related Impairment Measure, and the College Student Stress Scale. It was determined that all three hypotheses were supported with significant moderate, positive correlations. These findings were consistent with existing literature. Recommendations, implications, and limitations will be presented.

Andel, Brooke

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Biology**

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Spencer Harstad,
Rachel Cohen

Abstract Name: **The regulation of cold inducible RNA binding protein and hormonally upregulated neu-associated kinase in Anolis carolinensis lizards**

The green anole lizard (Anolis carolinensis) is a seasonally breeding animal. These lizards change physically and behaviorally due to a variety of genes that are regulated differently across seasons and affect why these lizards undergo changes during the different seasons. Cold inducible RNA binding protein (CIRBP) and hormonally upregulated neu-associated kinase (HUNK) are the two genes that we selected to look into their role in regulation in these lizards. HUNK contributes to phosphorylation and the upkeep of homeostasis.CIRBP is a cold-shock and stress response protein that can be induced after exposure to particular conditions that include hypothermic conditions. Based on our findings, we predicted CIRBP would be upregulated during the nonbreeding season and HUNK would be upregulated during the breeding season. We hypothesized that both genes would not vary in female and male lizards. First, we designed primers for our genes and checked these primers were then amplifying the correct PCR amplicons, by performing PCR and gel electrophoresis. DNA was then sequenced and RNA was isolated from brain tissues. We then used this isolated RNA to create cDNA to use in a qPCR. We created a standard curve that allowed us to analyze the data for both genes. We have successfully retrieved the qPCR data for CIRBP, HUNK, and beta-actin as a control group. We will be able to analyze our results and determine whether either gene is differentially expressed. This will allow us to understand the roles CIRBP and HUNK have in changes throughout the different seasons.

Andersen, Carrie

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Olivia Felix,
Carrie Andersen,
Mitch Comerford,
Karissa Dachel,
Adam LeCleir,
Madison Schultz

Abstract Name: Political Divide

The current political climate in teh US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Andersen, Gabrielle

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Gabrielle Andersen *CeCelia Zorn* *Wayne Zorn*
Jensen Lees *Glen Mabie* *Tania Riske*
Nancy Wendt *Joel Woletz* *Pam Woletz*
Tom Sather

Abstract Name: We Need You to Look not Look Away: A biopic of the lived experience of primary progressive aphasia.

This video biopic highlights the lived experience of a couple in our Eau Claire, Wisconsin community living with Primary Progressive Aphasia (PPA). While understanding of PPA is growing, this degenerative neurological condition remains poorly understood. This biopic was collaboratively created to increase understanding of PPA through the lens of the lived experience. Aphasia, which occurs most commonly due to stroke, refers to a loss or disruption of language. Primary Progressive Aphasia is a degenerative neurological condition that begins as subtle changes in language. However, as the disease progresses, not only do language difficulties become more frequent, but cognition declines as well. This video biopic was used as part of the course curriculum of an online graduate Aphasia course in the Communication Sciences and Disorders department at the University of Wisconsin – Eau Claire. While students typically are exposed to aphasia and related conditions through a combination of textbook and journal article readings, as well as clinical video examples, first-person lived experience videos are much less available. The video medium provided an opportunity to blend the science of the neurologic condition with the art of the video lens, providing viewers with a unique, first-person glimpse with personal video footage to enhance understanding of PPA. Students watched the video, and completed a survey developed by the research team. The survey assessed impact of the biopic, changes in knowledge of PPA, and how the video may have emulated key areas of best practice in services to individuals with PPA. Students reported significant changes in pre- versus post-knowledge of PPA. Additionally, they were able to identify examples of best practices evident in the video biopic. We conclude that the biopic medium is useful as a primary or supplementary medium to enhance students' understanding of PPA and the perspective of those living with it.

Anderson, Catie

Institution: ***MA - Bridgewater State University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Shannon Hafey *Catie Anderson*

Abstract Name: Examining the Experiences of STEM Students in Linked-Learning Communities

Women, students of color, and students of low socioeconomic status are historically underrepresented in science, technology, engineering, and mathematics (STEM) programs. While women are half of the population, they only make up 34% of STEM workers in the United States. African Americans, Latinx individuals, and Alaska Natives make up 23% of the STEM workforce, despite being 30% of the population (National Science Foundation, 2021). Disparities in representation for minority groups perpetuate stereotypes about who belongs in STEM (Brockman, 2021; McGee et al., 2017), while also limiting the voices and contributions of a broader population. Interventions, such as linked-learning communities (Goldman, 2012), diversity programs (Burt et al., 2020), and mentoring programs (Apriceno, 2020) have been introduced in STEM programs to combat underrepresentation; however, the research thus far is predominantly quantitative. While providing useful insight, quantitative data does not reflect unique individual experiences, so qualitative research would better allow for understanding of student experiences. The College of Math and Science at Bridgewater State University is conducting a randomized control trial on linked-learning communities of first- year STEM students. In these linked-learning communities, students take three classes together to build community and sense of belonging. As part of the larger study, this research will examine the role of linked-learning communities among STEM students with varying social identities and backgrounds. Students will answer open-ended questions regarding their experiences in the college, in their major, with peers and faculty, and their personal identities during semi-structured interviews. Data will be analyzed using thematic analysis to identify patterns (Braun; Clark, 2020). We anticipate that students will highlight connections with peers that were supported through the linked- learning communities. This examination of student experiences will increase our understanding of student success and belonging in STEM, particularly for traditionally underrepresented students.

Anderson, Christina

Institution: ***UT - Utah State University***

Discipline: International Studies

Author/Contributors:
Christina Anderson,
Colin Flint

Abstract Name: Oppression in Xinjiang: Rhetorical Parallels to the Causal Mechanisms

This paper focuses on the framings of ethnic conflict compared to expectations of political science explanations of the causes of such conflict. I used the example of Uyghur Muslims and Han Chinese in Xinjiang as narrated by Chinese and U.S. news media. Framings are statements used to portray the who, what, and why of an issue through the emphasis or exclusion of information to create a specific agenda. The theoretical expectation from social science is that ethnic conflict is a result of a commitment problem, which is where the two parties in the conflict cannot credibly guarantee the protection of the other. I performed a comparative content analysis to uncover the framings that both internal and external actors are using, the differences between them, and their congruence with universal expectations from political science analyses of ethnic conflict. Findings of incongruence help us interpret narratives surrounding issues of ethnic conflict and respond to them more effectively through policy as there may be a mismatch between the rhetoric surrounding these issues and what is at the root of the conflict.

Anderson, Danae

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Kathryn VanNatta,
Danae Anderson

Abstract Name: The role of response format in assessing the impact of increased video playback speed on comprehension

The use of asynchronous video lectures as a means of content delivery has become a common feature of college courses. This is obviously true of online courses; however, the steady growth of asynchronous learning approaches in face-to-face classes has accelerated rapidly in response to the COVID-19 pandemic (Lee, 2020). This requires students to play a more active role in self-regulating their learning; however, this also allows students greater flexibility in choosing how they engage with lecture content. Consequently, students often watch online content at accelerated speeds. To date, research findings have been mixed as to whether this negatively impacts comprehension (Lang et al., 2020; Murphy et al., 2021). Performance discrepancies among studies may be partly explained by differences in the response formats used to assess comprehension (Collins et al., 2020). The current study aims to describe the role of response format (i.e., open-ended vs. multiple choice questions) in evaluating the impacts of increased media playback speed on comprehension. Methods: Thirty-five college-aged students watched three 15-minute researcher-created video lectures relating to cognitive psychology, each presented at a different playback speed (i.e., 1x, 1.5x, 2x). After watching each lecture, participants answered ten multiple-choice and ten open-ended questions to assess comprehension. Each question set had two versions with identical question stems but different response formats. Videos and question sets were counterbalanced across participants to reduce ordering effects. Analyses have not yet been completed. We expect higher scores on multiple-choice questions and slower playback speeds. We also expect the open-ended questions at 2x speed to be disproportionately harder than other conditions. The application of findings to pedagogy and student study strategies will be discussed.

Anderson, Delaney

Institution: ***MI - Northern Michigan University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Delaney Anderson,
Maris Cinelli

Abstract Name: Isolation and structural analysis of new and possibly medicinal alkaloids from Hyoscyamus niger

The use of plants as medicine is an ancient practice that is still widespread today. Over half of modern medicines are derived from or inspired by natural products. There has not been extensive inquiry, however, into the constituents of many medicinal plants, so there are likely many more medicines to be found. The goals of the research to be completed in December 2022-May 2023 are to isolate and confirm the structures proposed for new, unreported alkaloids from the medicinal nightshade Hyoscyamus niger so that we may test their bioactivity. These new compounds, a series of tropane alkaloids named hyorhamnosines A-C, were discovered in June 2022 during liquid chromatography-tandem mass spectrometry (LC-MS/MS)-based profiling of young H. niger seedlings. The structures proposed from the mass spectra are not reported in the literature and these compounds could have medicinal activity. The most abundant hyorhamnosine alkaloids will be extracted from the plant and purified via semi-preparative high-performance liquid chromatography (HPLC) fractionation using an automated fraction collector. The structure of the pure alkaloids will be confirmed via nuclear magnetic resonance (NMR) spectroscopy, and the pure alkaloids will be sent to our collaborators for bioactivity assays. The isolation of novel plant molecules followed by their bioassay is a common route for discovery and development of drug candidates of plant origin.

Anderson, Jessica

Institution: *MN - Gustavus Adolphus College*

Discipline: Nursing/Health Science

Author/Contributors:
Jessica Anderson, Lauren McQuade

Abstract Name: **Acute Fluid Intake and its Effects on College Students' Body Mass Index**

Background. Body Mass Index (BMI) is a value derived from height (m) and mass (kg) measurements. BMI is broadly used to categorize individuals based on their tissue mass and height for purposes of medical screening, health information, and policy-making. A multitude of variables (e.g., race, gender, muscle mass, exercise, nutrient intake) can affect an individual's mass which alters their BMI. Individuals preparing for body fat screenings, including BMI measurements, are typically advised to abstain from drinking fluids four hours prior to testing to avoid inaccurate measurements. Few studies look at the effects of acute intakes of different types of beverages on BMI during a testing period. Statement of Purpose. The purpose of this study is to 1) examine the effects of acute fluid intake on college students' body mass index, and 2) investigate the relationship between beverage type and body mass index. Methods. Participants will be instructed to fluid-fast for twelve hours prior to testing. Participants will be randomly assigned into three groups: Water Intake (WI), Gatorade Intake (GI), or Control (C). Height will be measured prior to the ingestion of fluids. Participants will then consume their assigned beverage every thirty minutes for a total of three times. The amount of liquid ingested will be determined by their assigned sex at birth (Female: 75 mL/round; Male: 100 mL/round). The BMI formula, kg/m^2 = BMI, will be used. Data Analysis. Statistical analyses will be performed with SPSS Statistics 27.0.1.0. Descriptive statistics will capture critical patient characteristics. The BMI values will be compared using an ANOVA. Discussion. The researchers anticipate the GI will have significantly larger changes in BMI throughout the study compared to the WI and C groups.

Anderson, Margaret

Institution: *MN - Minnesota State University - Mankato*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Margaret Anderson *Mamy Hamed Fofana* *Nathan Pham*

Abstract Name: **Estimating Settlement of Strip Footings on Soft Clay Stabilized with a Granular Trench**

Research on foundation systems has brought increasing opportunity in the building construction sector for greater efficiency and accuracy in design. Available research development shows exploratory opportunity with a focus on quantifying the improvement offered by ground reinforcement through granular trench support in clay soils. Settlement analyses will be performed for a continuous strip footing placed on soft clay soil stabilized with a granular trench. The analysis software PLAXIS and LimitState:Geo will be used to develop models for evaluation and provide ultimate bearing capacity the along with settlement for considered configurations. Results from the theoretically developed model will be compared with published research for physical modeling and numerical method results in literature. The results will help the engineer to estimate the settlement when considering the inclusion of a granular trench beneath the strip footing. Design parameters such as trench depth, trench width, footing width, and friction angle of the granular material in the trench will be varied in this study to investigate their influence on the foundation settlement. Phase 1 of this research, which focused on quantifying the ultimate bearing capacity, was completed and concluded that these design parameters influence the design significantly. The current research (Phase 2) continues the investigation efforts of the various design loading parameters based on a set settlement. The models being used in the settlement evaluated used ratios of trench width to foundation width and then increasing the trench depth to width until the loading needed shows a plateau. With the addition of settlement, the engineer will be able to create a comprehensive foundation design for the problems in hand by addressing the main design constraints: strength and settlement. As an available resource, the results will provide progression in ability to accurately design reinforced foundation supports in building projects.

Anderson, Rory

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Rory Anderson

Abstract Name: ?Hoped and Wished My Life Would Feel Enchanted?: Queer Worldbuilding Within The Little Mermaid

This project examines the significance of queer theory and cultural production by analyzing the impact of The Little Mermaid fairytale, as well as its movie and musical adaptations, on the queer community. The literary and lyrical influence, themes of transformation, and queer folks' cultural interpretations/nostalgia constitute The Little Mermaid as a form of queer coming of age and worldmaking. The author of the original fairytale (1836), Hans Christian Andersen, wrote of unrequited love to express his own forbidden queer desire at the time. Likewise, Howard Ashman, the film's lyricist, expressed his experiences as a gay man living during the HIV/AIDS epidemic through his creative choices in the movie (1989). Besides the original context of the story and adaptations being produced as allegories for queer love, modern queer theories demonstrate the positive impact the tale has had on generations of queer folk, who have found self-acceptance through the story. Queer worldbuilding shows how parallels between Ariel's fictional world and common queer experiences are long-lasting and significant to creating a safe space for the community at large. In addition, the heroine's perseverance in the face of unaccepting family and prejudice offers a vision of queer futurity, whereas pop culture adoration of Ursula demonstrates the trans monstrosity theory. My research focuses on how transgender folks in particular connect to the story, and mermaids in general. The symbolism of the mythical creature in transfeminine communities has been discussed at length in academic spheres, but little research has been done on how the themes resonate with transmasculine and gender nonconforming individuals. Our community has an innate ability to find themselves in arts, music, and literature because they can convey emotions that are too complex or powerful to articulate independently, and queering The Little Mermaid is a brilliant example of that.

Anderson, Tyler

Institution: ***PA - Slippery Rock University of Pennsylvania***

Discipline: Theatre and Dance

Author/Contributors:
Tyler Anderson

Abstract Name: An Investigation of Race, Gender, and Queer Theories in Numerous Variations of Tchaikovsky's Swan Lake

As Western concert dance has evolved to include progressive ideas, bodies of color, Queer bodies, and not-fully-abled bodies, there are still historic structural barriers in place that restrict these bodies from being shown on a proscenium stage. Be it due to a person's race/ethnicity, gender expression, sexual orientation, or disability status, certain individuals have continued to face discrimination in a discipline that promotes self-expression as White, heteronormative, abled bodies have often hoarded the spotlight and program notes. There are, however, various organizations, such as Les Ballets Trockadero de Monte Carlo and Ballez that actively combat this discrimination by highlighting underrepresented bodies on stage. Analyzing dance through the lens of Gender Theory shines to light the ways in which political ideologies and beliefs held off stage affect what is presented on stage and those presenting it. In my essay, I will introduce the concepts of intersectional discrimination and oppression and apply them to historical and contemporary choreographic works such as Pyotr Ilyich Tchaikovsky's Swan Lake to support my claim that historically dance has been a segregated and patriarchal field, yet that has not stopped individuals with marginalized identities from creating, producing, and distributing works to various audiences. Inspirations from the time periods in which the works were created, such as during the Civil Rights Movement and HIV/AIDS epidemic, will also be dissected to attest to the motivations behind the works and choreographers. I will also examine the various stigma management tools utilized by these companies, such as using humor or conventionally attractive bodies to make their works palatable, and further examine who, ultimately, these decisions favor. This synthesis of discriminations faced by performers and choreographers alike will expose the various ways discriminatory behaviors creep into dance settings, the effect they have on those involved, and the audiences' responses to them.

Andregic, Nicole

Institution: *PA - Susquehanna University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Nicole Andregic,
Caitlin Weaver

Abstract Name: **Determining Interactions between Neurotransmitters and DNA Sequences Associated with Neurodegenerative Diseases**

The interaction of various neurotransmitters with G-rich DNA sequences was analyzed to understand its role in the associated neurodegenerative disease. The neurotransmitter may promote or inhibit the formation of quadruplex DNA in G-rich sequences, which may affect disease pathology. Additionally, the binding of the neurotransmitter may be concentration dependent or dependent on the presence of a monovalent cation. The interaction of four DNA sequences, NOP56 5'-(GCG CTG)-3', CSTB promoter 1 5'-(CGG GGC GGG GCG)-3', PRNP 5'-(CCT CAT GGT GGT GGC TGG GGG CAG)-3' and c-myc 5'-(TGA GGG TGG GTA GGG TGG GTA)-3'were separately studied with the neurotransmitters tryptophol, melatonin, serotonin, and dopamine. Fluorescence spectroscopy, DNA melting, molecular docking and surface enhanced Raman spectroscopy (SERS) were used to study the interactions. Dopamine promoted the formation of quadruplex in CSTB and c-myc but inhibited it in NOP56. The DNA sequences NOP56 and CSTB only formed quadruplex with melatonin in the presence of potassium ions. Melatonin promoted quadruplex formation with c-myc. Serotonin promoted the formation of quadruplex DNA in NOP56, CSTB, and c-myc. Tryptophol inhibited the formation of quadruplex DNA in NOP56 and CSTB samples, but c-myc formed quadruplex with or without tryptophol and potassium ions. PRNP did not form quadruplex even after the addition of each neurotransmitter. The SERS data showed a vibrational signature, that was dependent on DNA concentration. Further analysis will be completed to determine how these disscovered interactions can affect the progression and characteristics of the respective diseases.

Andrews, Annaya

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Joshua Stephenson,
Constance Ihearahu,
Dr. George Ude

Abstract Name: **Longitudinal Study of Seasonal Effects on Soil Microbial Communities at Bowie State University Campus Using Metagenomics Approach**

Metagenomics is the application of metabarcoding technique to the study of communities of microbial organisms directly in their natural environments, which bypasses the need for isolation and lab cultivation of individual species. Soil microbiome is one of the world's largest collection of biodiversity and the microorganisms play critical roles in the regulation of soil fertility, carbon cycle, nitrogen fixation, etc., yet a vast majority of soil microorganisms is still unknown. Using the metagenomic approach, soil microbial communities from three locations (Henry Circle Fountain, Loop Road Lake, and Loop Road Stream) on Bowie State University's (BSU) campus were analyzed across all seasons (Fall 2019, Spring 2020, Summer 2020, Winter 2021, and Fall 2021). The aim of this research was to determine the impact of seasonal change on the diversity of BSU's soil bacteria ecosystem and to identify its microbial diversity by season and location. DNA extraction was performed, followed by polymerase chain reaction (PCR) using 16S index primers, and gel electrophoresis to determine successful amplification of PCR samples. Samples were sequenced and analyzed using DNA Subway's Purple line. This line is designated for metabarcoding anaysis and was used to identify microbial taxa and genetic variations within BSU's microbial community. Season specific microbial groups as well as common soil microbial groups were identified. Results determined Proteobacteria as the most abundant phyla across all seasons and locations. Other abundant phyla identified were Bacteroidetes, Acidobacteria, Verrucomicrobia, Cyanobacteria and Chloroflexi. Analysis also identified more diverse taxa during Fall and Spring seasons than in Winter and Summer seasons.

Andrisoamampianina, Narindra

Institution: *PA - Lafayette College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Narindra Andrisoamampianina *Lauren Myers* *Gabrielle Strouse*

Abstract Name: **Using Structured Video Chat To Improve Relationships Between Young Children And Remote Grandparents**

We hope to add to the existing literature about understanding the cognitive and social developmental challenges of video chat in order to support its use with children. Previous studies showed that video chats can be challenging for everyone, especially for children (Myers & McKenney, 2019). Importantly, more families used video chat during COVID-19, but only 28% of grandparents video chatted with their grandchildren (Duflos & Ferrand, 2020). Increasing this percentage could significantly improve grandparent-grandchild relationships because video chat frequency is a strong predictor of grandparents' closeness to their grandchild (McClure & Barr, 2017). Our research directly compares two approaches to facilitating video chats between grandparents and young grandchildren (18-72 months of age): structured reading, structured play, and an unstructured control group. Both structured approaches have three sets of instructions that involve varying the location in which the activities take place: in the grandparent's environment (Grandparent-led Reading and Show and Tell), in both the grandparent and child's environment (Reading with Matching books and Imitation with Common Objects), or on the screen (On-screen ebooks and Drawing). Families receive instructions about which activity to try, and use video chat on their own without the researchers being present. Parent-child-grandparent triads (n=180; the largest multi-session observational study of young children and video chat to date) will record 10 video chats each. We expect that structured reading and structured play will increase children's engagement and joint attention, defined as shared gaze on an object with the grandparent (primary outcome measures), as well as grandparents' enjoyment of video chat and closeness with their grandchild (secondary outcome measures). Data collection is currently ongoing, and preliminary results from a subset of the sample will be available by the time of the conference. We expect that structured video chat will facilitate more positive social interactions between grandparent and grandchild.

Andrus, Kassidi

Institution: *UT - Utah State University*

Discipline: English/Linguistics

Author/Contributors:
Kassidi Andrus

Abstract Name: **Keep Sweet: a rhetorical criticism of the ideographs within the FLDS religious sect that built the hegemonic society lead by Warren Jeffs**

This article is a rhetorical criticism of the "keep sweet" ideology that contributes to the hegemonic society of the FLDS religious sect led by Warren Jeffs. The Fundamentalists of the Church of Jesus Christ of Latter-day Saints are a cult that practices polygamy and communalism. According to McGee, Humans are not conditioned directly to beliefs but to a vocabulary of concepts, called ideographs, that function as guides, excuses for behavior, and act as building blocks for an ideology. Three ideographs will be analyzed: perfection, obedience, and loyalty. I analyze these ideographs' diachronic and synchronic structures and their relationships by comparing revelations given by Warren Jeffs from prison in 2011 and in 2022. This analysis demonstrates how the FLDS constructed these ideographs through rhetorical documents with set standards that construct the "keep sweet" ideology of the FLDS church. Keep sweet, no matter what; the term reminds members to do as ordered, not question, not cause conflict, and to strive for perfection. In this rhetorical analysis, I argue that these ideographs developed to exert control over the behavior and beliefs of the FLDS members, persuading them to obey the patriarchy without question. The ideological criticism reveals why the "keep sweet" ideology has such a transcendent effect on generations of people.

Anthony, Sneha

Institution: *AL - University of Alabama at Birmingham*

Discipline: International Studies

Author/Contributors:
Sneha Anthony

Abstract Name: **The Path of Matrimony: A Comparative Analysis of Indian Arranged Marriages and American Love Marriages**

From a Western perspective, Indian arranged marriages tend to look like an oppressive practice as individuals see the arrangement process as a complete loss of choice. Due to the individualistic nature of American culture, the courtship process of arranged marriages is considered taboo in the Western world since arranged marriages are not founded on intimacy and connection, which tends to be the groundwork for American marriages, creating a negative attitude around the practice. However, the marriages from each culture have shown themselves to be very similar in nature through their foundational components, despite their vast differences in the path to their relationship. My research bridges the gap between Indian Arranged marriages and American Love marriages by identifying how the diverse cultural mindsets affect the concept of marriage in each culture but can still lead to the same feelings and attitudes in both marriages. Using Sternberg's Triangular Theory of Love, I breakdown down the overall concept of marriage into three different components, love, intimacy, and compassion to discuss how each culture chooses to prioritize each component in their individual understanding of marriage. The research discusses how the individualistic nature of American society and the collectivist nature of Indian societies create the different ratios of each component in each type of marriage, but the project ultimately highlights how each marriage shows that there is significant overlap in the feelings and attitudes that each kind of couples has towards their relationship. Through an intense review of journals discussing the psychological aspects behind each relationship, interviews of couples from each type of marriage, statistics behind relational attitudes, and a deep analysis of different religious and social characteristics of each culture, I my research explains how each relationship can lead to the same outcomes despite their different pathways.

Antici, Jacob

Institution: *AR - Arkansas State University*

Discipline: Mathematics

Author/Contributors:
Jacob Antici

Abstract Name: **A Non-Negative Matrix Factorization Approach to Computing ?Fingerprints? in Spectra of Nuclear Materials and Novel Statistical Proof**

In nuclear reactors, tracking and predicting the amount and type of plutonium present is essential to prevent build-ups that can lead to nuclear meltdowns. When different wavelengths (from 0-1650) are run through 110 separate nitric acid solutions for ten repetitions, the resulting data matrix is 1650 x 1100. To predict the plutonium present and the nitric acid used, the dimensions of the matrix must first be reduced. In this paper, we proposed a novel application to reduce the dimensions using a Non-Negative Matrix Factorization. The method currently used to reduce the dimensions is Principal Component Analysis. However, multiple reduction techniques should be implored to check the prediction when dealing with a potentially catastrophic element. In this research, the first attempt to reduce the dimensions of plutonium data using a non-negative matrix factorization approach was utilized. The results proved to be more explainable and often more accurate than principal component analysis showing that if implored instead of PCA or in addition to PCA, this novel NMF approach can help prevent nuclear meltdowns. Additionally, this article is aided with a novel supplemental proof conveying that minimizing reconstruction error is equivalent to maximizing variance in principal component analysis.

Apostoli, Giana

Institution: ***WI - Carthage College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Giana Apostoli *Alexandra Rynders* *Jack DeSalvo*
Cameryn Eickstead *Olivia Wolf* *Daniel Miller*
Sarah Terrill

Abstract Name: Avoidance Expression of Wistar-Kyoto and Sprague-Dawley Rats Following Overnight Fast

Interoceptive feedback to the brain about the physiological internal state of the body plays an important role in guiding behavior. A single overnight fast can reduce anxiety-like behavior in rats, as assessed in the elevated plus-maze, open field tests, and acoustic startle and light-enhanced startle responses in rats. This reduction in anxiety appears to be an adaptive response to negative energy balance as it promotes exploratory and food seeking behaviors thus increasing the likelihood of body energy repletion. However, very little is understood about the biological and behavioral mechanisms through which physiological state influences behavior in the Wistar-Kyoto (WKY) rat, a model for stress vulnerability. The WKY rat exhibits behavioral inhibition (BI), a temperament characteristic associated with increased vulnerability to stress when compared to Sprague-Dawley (SD) rats, which serve as non-behaviorally inhibited (NBI) controls. Previous research has demonstrated that WKY rats exhibit superior avoidance performance in a signaled lever press avoidance task in which a tone conditioned stimulus (CS) signals a foot shock unconditioned stimulus (US) relative to NBI controls. The current study tested the hypothesis that an overnight fast affects lever press avoidance responding. We tested this by examining the effect of an overnight fast in female WKY (n = 8) and SD (n = 8) rats on signaled lever press avoidance. While the overnight fast did not impact avoidance behavior in WKY rats, fasting significantly increased avoidance performance in SD rats. However, total lever presses during the avoidance period was significantly increased in both WKY and SD rats following overnight fast. Our results support the view that physiological state plays an important role in influencing behavior and is the first demonstration that a single overnight fast can enhance avoidance responses in non-behaviorally inhibited SD rats to the level of avoidance demonstrated by behaviorally inhibited WKY rats.

Apps, Marshall Apps

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Kira Haus,
Marshall Apps

Abstract Name: Improving Patient Outcomes for Cancerous Tumor Removal

Advancements in tumor ablation through use of biocompatible foam will allow for an optimized procedure, leading to decreased postoperative pain. Ablation involves using medical imaging, such as ultrasound and CT-tomography, to remove cancerous tumors in the liver, kidney, and lung. Targeted microwave energy is used to kill and remove cancerous cells. There is risk of thermal damage to neighboring healthy tissues, which can lead to potential complications to nearby organs and blood vessels, as well as unnecessary postoperative distress. There are current techniques to displace tissues and provide a buffer between the target tissue and its surroundings. Saline or CO2 can be used to separate the tissues, but are not always effective due to gravity. Saline tends to pool at the bottom of the cavity and CO2 rises, making both inadequate displacement agents. Creation of a biocompatible foam was completed, through a collaboration with Mayo Clinic Health Systems-Eau Claire and UW-Eau Claire, to replace current methods. The stiffness and stability of the foam displaces tissues for the duration of the procedure, and eventually dissipates. The foam provides thermal insulation during the procedure and prevents thermal damage from the ablative process. Such properties of the foam were quantified using agar hydrogel tissue mimics with a series of ablation trials. The hydrogels were embedded with thermochromic dyes that change color at a given temperature, and each temperature change represented the extent of tissue damage. Photos captured during the ablation allowed analysis of the color change in individual pixels to map to temperature to determine the insulative foam properties during the duration of the procedure. Through manipulation of biocompatible materials, an enhanced foam properly separates and insulates tissues. This will prevent extensive discomfort during and after the ablation procedure to remove the cancerous tissue and protect the healthy tissue, thus improving patient outcomes.

Aranda, Emily

Institution: ***TX - Our Lady of the Lake University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Michael Olson *Alyssa Phillips* *Jenelle Chapman,*
Hailey Hollinshead *Jacob Ferris*

Abstract Name: Hyperbaric Oxygen Therapy: Non-Healing Chronic Wounds

Hyperbaric Oxygen Therapy is the center of relief for non-healing diabetic wounds, compromised skin grafts, osteoradionecrosis, soft tissue radio necrosis, gas gangrene, and chronic osteomyelitis. Generally processing diseases and pressurizing the chamber up to 2 or 3 atmospheres on top of the patient (500 mm Hg). Studies show that patients will show progression after 40-60 treatments. While solely focusing on the lower limbs and dealing with an ulcer diabetic foot, research shows that it'llsignificantly increase the stem cells, mobilization, blood flow, and vasculature to the designated area. All the while producing peripheral axonal regeneration it will also focus on improving neuropathy. While we acknowledge that this non-healing wound comes with its risks such as losing all sense of pain and ultimately goes in correlation with affecting systematic effects. Importantly, these data will be collected over a period of time allowing effects of HBOT to be examinedon the changing community of bacteria present in DFI. Hypothesis: HBOT effects non-healing wounds by accelerating the healing process and interacting with bacterial species in wound, causing a change in the virulence potential furthermore interacting/altering multispecies. The hypothesis was tested by utilizing microbiome analysis on sequential samples that isolate adult patients who experience uncomplicated HBOT without antibiotics. Results: Data indicated the MIC of most antibiotics were lower versus normoxic growth. Bacteria undergoing alternate gene regulation and respond to hyperoxia and pressure generated in HBOT. Biofilm studies showed that bacteria S. aureus reduced greatly under HBOT. Conclusions:Research can better help to identify the many existing mutualistic symbioses it'll then help the healing process of HBOT and minimize the diversity of microbial populations. Such mutualistic symbioses are identified, then targeted antimicrobial therapy could be used togenerate a shift in the microbial populations allowing for faster healingof thesechronic wounds

Aranzola, Ana

Institution: ***TX - The University of Texas at El Paso***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ana Aranzola *Alexis Maurel* *Ana Cristina Martinez Maciel*
Eva Schiaffino *Eric MacDonald*

Abstract Name: 3D Printed Positive Electrodes for Lithium-Ion Batteries

Constantly evolving technology demands equally advanced subcomponents. Commercial lithium-ion batteries, fundamental in all electronics, are composed of opposed layers arranged in a single pile, promoting a two-dimensional diffusion of lithium ions to generate energy. Multi-material additive manufacturing (AM), or 3D printing, can potentially revolutionize the production of these lithium-ion batteries. It is possible to improve their electrochemical performance through an improved mechanical design, made possible by computer-aided design programs and the newest advances in AM. Reconfiguring batteries' structures to promote three-dimensional ion diffusion will maximize energy efficiency and reduce futile weight and volume. The first step towards reconfiguring batteries is to produce each individual component. This research project focuses on the development and 3D printing of a novel photosensitive material loaded with lithium cobalt oxide (LiCoO2) electroactive active material and a conductive additive that will act as the positive electrode. The Vat Photopolymerization (VPP) printing technique was employed to print this new resin due to its wide range of adjustable parameters and resolution. Printing challenges related to the resin's properties were overcome by optimizing the printing parameters including exposure times, layer height, temperature, and UV light intensity. The prints were subjected to thermal post-processing to obtain better electrochemical performances while maintaining adequate mechanical integrity. The results obtained through this research pave the way towards newly designed 3D printed batteries promising better performance. In the future, efforts will be focused on the design and printing of complex battery components with the ultimate goal of developing batteries as non-obtrusive components of electronics by conforming their shapes to the specific design of each application.

Archibald, Maren

Institution: *UT - Utah State University*

Discipline: English/Linguistics

Author/Contributors:
Maren Archibald

Abstract Name: **"A bird with a broken wing": Disability and Normality in Kate Chopin's The Awakening**

Kate Chopin's "The Awakening" depicts Edna Pontellier, a married woman attempting to cast off the disciplinary shackles of the nineteenth century through a personal rebirth. As theorized by the French philosopher Michel Foucault, discipline is more than controlling behavior; it is about optimization of the body. The three pillars of discipline – hierarchical observation, normalizing judgment, and examination – contribute to a view of the body as "a site of normalization." Renowned disability studies specialist Lennard J. Davis theorizes that in any novel can be found "a kind of surveying of the terrain of the body, an attention to difference." In "The Awakening," Chopin often describes Edna's bodily experiences, from exhaustion to passion to boredom. The language surrounding Edna's awakening is marked by disability metaphors that frame her as a disabled body and polarize her from the moral norm. Often, scholarly conversations about "The Awakening" are centered on its feminist or naturalist themes, but the lens of disability studies can provide a fresh perspective on Edna's transformation, revealing how constant monitoring characterizes her struggle as one against normalization, not just expectation. Applying Foucault's three pillars of discipline and Davis' reflections on normality and disability, I plan to show that Edna's position outside the norm is exaggerated by the disability-coded language used to describe her body and behavior, and that it is not so much the societal expectations themselves against which Edna rebels, but rather the suffocating standards of discipline and normality that surround them. Anticipated audience takeaways will include an understanding of the relationship between disability and normality and an increased awareness of the subtle presence of disability metaphors in early feminist literature.

Archila, Jasmine

Institution: *CA - University of California - Los Angeles*

Discipline: Psychology/Neuroscience

Author/Contributors:
Carlos Cepeda

Abstract Name: **Understanding the Role of Glut3 in Huntington's Disease using Mouse Models**

Our brains make up 2% of our total body weight. Despite its size it uses up 20% of the total energy in our body. This energy is in the form of glucose. Normally, glucose is delivered into the neurons in the brain by a protein called GLUT3. In individuals suffering from HD, there is less of this protein being expressed. As a movement disorder Huntington's disease symptoms include problems with coordination and loss of muscle strength. Past studies have shown that loss of Glut3 in fruit flies was associated with worse HD symptoms and earlier onset. The same study showed that increasing Glut3 delayed the onset and ameliorated some of the symptoms. Together these focus points help form our hypothesis in which we say that deletion of glut3 will exacerbate and accelerate HD symptoms while overexpression of Glut3 will delay and improve the HD phenotype. This was tested through both breeding, which provides us with these mice models, and behavioral analysis that allow us to examine the severity of phenotypes. Our behavioral analyses include rotarod and open field in which we expect to see that the mice who are missing glut3 fall earlier and have trouble keeping up compared to the WT mice (normal mice). When we create these mice who overexpress glut3, we expect them to perform better than the knockout mice and at the same level as the WT mice. From the open field we expect that glut3 levels will affect other behavioral traits. When mice have glut3 knocked out they would explore less meaning they mainly stay in one spot, and when they do move they move at a slower pace. Overall glut3 levels determine the severity of symptoms in HD which in this case we focus on motor coordination.

Arend, Abby

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Katie Stetzer *Lily Egan* *Abby Arend*
Tom Sather *Lesley Mayne*

Abstract Name: Perceptions of Social Media's Educational Value in Relation to Evidence Based Practice

This project evaluates the educational value of social media platforms including TikTok, Instagram, and Twitter as course-based learning supports in an online graduate-level aphasia course. Components of evidence-based practice (EBP) in each of the three social media platforms are analyzed against student posts. These components include client perspectives, clinical expertise, and internal/external evidence (ASHA, n.d.). Additionally, student perceptions regarding the utilization of social media in course-based assignments are analyzed. Individually, TikTok (Escamilla-Fajardo et al., 2021), Instagram (Carpenter et al., 2020), and Twitter (Hull Dodd, 2015) indicate a positive response among students and faculty in higher education. Social media in a classroom setting can help co-create knowledge, facilitate different learning styles, promote experiential learning, and enhance collaborative skills (Stathopoulou, 2019). Though each of the platforms are continuously rising in popularity, there is a substantial absence of conducted research studies that evaluate them holistically. A course-based assignment requiring use of each of the three social media platforms was assigned to 24 graduate students in an online aphasia-related course. Six prompts were presented every two weeks, and students used their assigned social media platforms to explore and develop answers to the prompts. Platforms were rotated across all students, so each student used each platform twice. The social media relics submitted by students were categorized based on the three components of the EBP triangle. Frequency counts for the presence of EBP domains within submissions for each platform will be presented. Additionally, student perceptions of each platform, their learning benefits, and their comparative value to the other course assignments will be discussed. Results will be discussed and applied to potential course-based pedagogical applications using social media platforms.

Ariano, Ky

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ky Ariano,
Paul Schweiger

Abstract Name: Determining the functional role of the GOX1969 protein in Gluconobacter oxydans

Acetic acid bacteria are used in many industrial processes (vinegar, vitamin C, antidiabetic drug miglitol production, etc.). These industrially important reactions are mainly done by an arsenal of membrane-bound dehydrogenases that shuttle electrons directly into the respiratory chain. Among these dehydrogenases, GOX1969 in Gluconobacter oxydans was predicted to be a PQQ-dependent dehydrogenase of unknown function. However, dehydrogenase activity has not been detected after multiple analyses by a number of labs. Reanalysis of the protein sequence reveals similarities to the BamB protein that functions as a subunit of the-barrel assembly machine (BAM) complex that is responsible for the assembly of-barrels in the outer membrane of gram-negative bacteria. To test if the actual physiological function of GOX1969 is as the BamB subunit of the BAM complex, we introduced the gox 1969 gene into an Escherichia coli K12 mutant that lacks BamB. Growth deficiencies in the mutant lacking BamB were restored when gox 1969 was expressed on the plasmid pBamB. This provides the first evidence that GOX1969 is functionally acting as a BamB in G. oxydans. Functional information of uncharacterized genes will provide new insights that will allow a more accurate modeling of metabolism and more rational strain design.

Armond, Reid

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Reid Armond

Abstract Name: Education Incentives for Vocational Schools in the Northern Midwest

As students graduate from high school, they are expected to choose their future educational path. The options for students consist primarily of attending a four-year university or a two-year vocational school. In the US, four-year schools continue to enroll significantly more students than vocational schools, which has implications for the labor market. This research examines the reasons that students attend higher education, and if the incentives that they face disproportionately favor four-year universities. To answer my research question, I conducted interviews and administered a survey of students at a four-year university and students at a technical college. I looked at motivators such as the cost of attendance, “translatability” or the ability to take what you learn in school and apply it to the workplace, and “personal achievement” or the perception of a student’s ability to complete the program. Comparing survey responses to in-depth interviews, I find that the decision to attend university or technical school is the result of several factors. Most important, for both groups, is program options. Since many programs are offered exclusively at the university level or at trade school, if a student knows what program they want to pursue, this has a great deal of influence on their choice. Surprisingly, personal connection and community is a primary motivating factor for university students. Regarding incentives, such as financial aid, nearly half of four-year students are given some incentive to attend school. However, the overwhelming majority of technical college students (>80%) did not receive any incentive to pursue their program of choice. These results are important because they show that incentives disproportionately benefit four-year universities. To better prepare students to enter the labor market that demands certain types of skills, the same kinds of incentives should be provided for students to attend two-year schools.

Armstrong, Diego

Institution: ***MT - Montana State University - Bozeman***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Diego Armstrong

Abstract Name: Fabrication of Micromodels for Analysis of Drying and Multiphase Flow in Porous Media

Drying and multiphase flow in porous media is central to a broad range of natural and engineering applications, including oil recovery, CO2 storage, and critical zone science. In many scenarios, these porous solid matrices display multi-scale variability in pore structure and physical properties such as porosity and permeability. For instance, in critical zone, soil is often viewed as a hierarchical organization: primary particles of a few micrometers in size form microaggregates of hundreds of micrometers in size, which in turn form macroaggregates, effectively leading to dual porosity in the porous media. The resultant multi-scale flow dynamics and inter-/intra-aggregate interaction in this system are recognized to control numerous processes, such as water and gaseous transport. However, the underlying physics including fluid mechanics and thermodynamics, is not well understood. In this study, we fabricated surrogate porous media called micromodels employing microfabrication techniques. The fabrication process includes HMDS oven exposure, photolithography, plasma etching in an Oxford ICP machine, and anodic bonding. The new micromodels are unique in that they are in a glass-silicon-glass bond. Previous micromodels use one glass wafer per silicon wafer and are analyzed from the glass side of the micromodel. These new double glass micromodels allow for an innovative approach for flow measurements as two microscopes are used. The new micromodels provide solutions to more efficient analysis of multiphase flow. Analysis includes velocimetry, drying process of water in porous media, and water-air interface behavior through porous media, which will provide valuable insight into the underlying physics during drying of porous media.

Arnob, Sakib Shahriar

Institution: ***PA - Lafayette College***

Discipline: Economics

Author/Contributors:
Sakib Shahriar Arnob

Abstract Name: Effects of External Shocks on the labor dynamics of Refugees and Locales: Similar or Varied?

Refugee displacement is one of the significant drivers of global migration in the 21st century. It is also responsible for various economic and political shifts in countries across the world. One such economic shift identified is the imbalance in labor supply and wage caused by migration in the countries and regions that host the refugees. The recent mass migration of the Rohingya refugees, caused due to forcible displacement by the Myanmar government, to the southernmost part of Bangladesh has impacted the local labor market dynamics. However, to date, the impact is relatively unknown. The COVID-19 Pandemic further exacerbated the issue and created greater imbalances in the local labor dynamics. Previous studies conducted on mass migration including the Mariel Boatlift study, conducted following the arrival of Cuban migrants to Miami that increased the Miami labor force by 7%, showed virtually no effect of the migration on the local labor markets. The labor markets in developing countries tend to be different from developed countries and hence mass migration in emerging countries, alongside the presence of external labor shocks, can have adverse effects on their labor markets. Using available panel data (Cox's Bazar Panel Survey - 2019 & 2020/2021) on the Rohingya refugee and local population labor conditions, this study intends to investigate how the pandemic has impacted the refugee and local labor wages through difference-in-difference analysis to compare the labor markets of areas affected by refugee migration to less/non-affected local regions and intends to show plausible and significant effects on these labor metrics within the local region.

Arnold, McLayne

Institution: ***UT - Weber State University***

Discipline: Nursing/Health Science

Author/Contributors:
Misia Farnsworth *McLayne Arnold* *Ben Laughter, Cameron Clark*

Abstract Name: Viability of Trypanosoma cruzi in RBCs at cold storage temperatures

Chagas disease (American Trypanosomiasis) is caused by the protozoa Trypanosma cruzi. Chagas disease affects approximately 10 million people in Latin America, manifesting in pyrexia, malaise, splenomegaly, and cardiomyopathies. T. cruzi is commonly spread through the infected feces of the 'kissing' bug. After insect bites, blood transfusion is the second most frequent mode of transmission. The Center of Disease Control (CDC) estimates in the US, around 300,000 individuals are infected with T. cruzi, causing a considerable disease burden. The goal of this research will be to study the viability of T. cruzi in packed red cell aliquots stored at various cold temperatures to study parasitemia. If successful, storage of packed red cells in cold temperatures will show reduced viability of infectious T. cruzi; creating a simple adjustment to current prevention methodologies furthering the reduction of transfusion-transmitted American trypanosomiasis. Warming temperatures can shift the distribution of triatomine insects, allowing the spread of the disease to non-endemic areas such as the United States as climates become more favorable. Pollution, insecticide resistance, and tourism are additional factors that may contribute to this threat. Means to prevent trypanosomiasis from blood products will become pertinent with this change. Routine screening of blood-donors using a questionnaire has reduced the incidence of contracting trypanosomiasis in non-endemic areas. Serological testing is not mandatory outside endemic areas because it is suspected that the number of T. cruzi-infected donors is small, and screening each donor would not be cost-effective. Although the questionnaire has been effective, it fails to screen asymptomatic carriers resulting in transfusion-transmitted infections. To mimic organ-donor tissue, cultures stored at low temperatures have shown a reduction of trypanosomes. Past research has explored cold storage on the viability of Babesia in blood bags. Minimal research has been conducted on the viability of T. cruzi in blood stored at cold temperatures.

Aro, Hailee

Institution: *MN - Hamline University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Hailee Aro *Lauryn Magwaro* *Lawrence Wackett,*
Betsy Martinez-Vaz *Leif Hembre*

Abstract Name: **Investigating the Potential of Gut Bacteria to Metabolize Metformin**

Originating from galegine, found in goat's rue, metformin became the most prescribed pharmaceutical for type 2 diabetes due to its capabilities to control blood sugar levels without causing hypoglycemia. Aside from maintaining blood sugar levels, metformin has been used to treat heart failure, polycystic ovary syndrome, weight loss, inflammation, and can help decrease the risk of a stroke. With the widespread use of metformin, about 30% of users have reported side effects of nausea, vomiting, diarrhea, stomach aches, loss of appetite, or a metallic taste in their mouth. This project investigates the potential of gut bacteria to metabolize metformin. Growth studies were performed with two different brands of probiotics and metformin as the nitrogen source. Results show that probiotics have limited capability to degrade metformin, however, the absence of known metabolic intermediates suggests that the drug is not fully metabolized. Total genomic DNA was isolated from commercial probiotic cultures and used to conduct polymerase chain reaction assays (PCR). Primers were designed to amplify metformin degrading genes, previously identified in the metformin degradation pathway. This was followed by gel electrophoresis and DNA sequencing to determine if the probiotics contained genes similar to the ones encoding metformin degrading enzymes. The results show that a gene homologous to cytD was present in both probiotics. Probiotic B also contains a hypAB homolog. Using BLAST, results show that the DNA fragment amplified with cytD primers was identical to a gene encoding an ABC transporter for Lacticaseibacillus rhamnosus, which is a prominent bacterium in both probiotic cultures. The limited metformin degradation observed in commercial probiotic cultures suggest that gut bacteria do not metabolize this drug under aerobic conditions. Future work will focus on studying metformin degradation under anaerobic conditions and using bacteria from human feces capsules to mimic the gut microbiome.

Arreola, Aime

Institution: *CA - University of California - Merced*

Discipline: **Public Health**

Author/Contributors:
Aime Arreola,
Kimberly Sanchez,
Karina Diaz Rios

Abstract Name: **Dietary Patterns in Mexican-origin Adults in the U.S.**

Mexican-origin adults in the U.S. have the highest prevalence of diabetes (14.4%) in comparison to other Hispanic subgroups like Puerto Ricans (12.4%) and Central/South Americans (8.3%). Improving diet quality in Mexican-origin populations can help reduce their risk of diet-related chronic diseases, including diabetes. This study aims to describe the state of evidence on dietary patterns of Mexican-origin adult populations in the U.S. A systematic review was conducted with searches in four databases (i.e., Google Scholar, PubMed, Web of Science, and ProQuest) following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Articles were included if their primary focus was diet quality among Mexican-origin populations in the U.S. Findings of peer-reviewed articles focusing on Mexican-origin adults were systematically extracted and narratively summarized by 2 researchers. The initial search rendered a total of 1,383 articles. After title and abstract review, 91 articles were included; 22 articles were retained and summarized upon full-text review. Findings revealed that Mexican origin populations have a poor diet quality. Specifically, Mexican-origin individuals consume more refined grains and sodium and do not meet the recommended amount of unsaturated fat. U.S.- born Mexicans who are the most acculturated consume more sodium, saturated fats, and sugars, than Mexicans who are the least acculturated. This research provides insight into the dietary patterns of Mexican-origin populations that may contribute to an increase in the risk of chronic diseases such as diabetes. Given the increased risk of diet-related chronic diseases among individuals of Mexican origin, the poor diet quality of this group unveiled in this study indicates a critical need for interventions to improve eating choices, particularly around limiting the consumption of refined grains, sodium, and saturated fat, with a targeted focus among those who are more acculturated

Arriaga, Elizabeth

Institution: ***TX - San Jacinto College***

Discipline: Education

Author/Contributors:
Elizabeth Arriaga,
Marissa Marshall,
Isabel Santos

Abstract Name: Gun Violence in Schools

Gun violence has become a huge problem, especially when it comes to our schools. Just this year, as of October 31, 2022, there have been forty school shootings, twenty-eight of the victims were students and the other six were staff members. According to SIERP (Stanford Institute for economic policy Research) more than a hundred thousand students between 2018-2019 were involved in school shootings. School shootings have a major effect on students' mental health, academic performance, and enrollment ((Dodson, 2021,). School should be a place where children want to go to learn, make new friends, and a place where they can feel safe and secure. Sensible Gun laws need to be implemented in addition to school based interventions that address problems before shootings occur. One solution that has been tossed around and will not help this situation is arming teachers with guns. This literature review looks at the effects and impact of gun violence on students and offers some research-based approaches for creating safer schools and communities (McMillan, Jordan; Bernstein, 2022).

Arriaga, Roel

Institution: ***TX - Laredo College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Roel Arriaga

Abstract Name: The Future of Prosthetics: Prosthetics and how 3D printing will shape its future

The term "prosthetic limb abandonment," is used to describe an anomaly in which people need or use prosthetics and are given the opportunity and money to acquire one, but still deny the prosthetic. This anomaly can be caused by different factors like the social perspective of prosthetics, or just the look and feel of these artificial limbs. With the use of 3d printing people can design custom prosthetics that fit, feel, and look good. Therefore, 3D printing might decrease the amount of people who are under the umbrella of prosthetic limb abandonment.. A systematic review was performed to gather information on 3D printing and prosthetics such as prices of prosthetics, 3D printing implemented into prosthetics, the transition into cybernetics, and the look of prosthetics. Articles were analyzed to collect information on the advancements that have been made in the past few decades. Based on the data gathered, 3D printing does reduce the cost of manufacturing an artificial limb because of the reduction in time needed to make the prosthetics and the variety of possible material that can be used to create the prosthetic. Not only can 3D printing be used as a prosthetic cover, but it can also be used to 3D scan and print a mold of someone's ear to help create soft tissue prosthetics also known as the SPPC process. The transition into cybernetics has been a slow process, however engineers in Hiroshima, Japan have managed to create a prosthetic that takes its input from ultrasonic sensors, it also possesses an impressive range of motion. The purpose of this paper is to broaden the reader's view on the field of prosthetics and help people realize the potential this industry has in the near future. Keywords : Prosthetics, 3D printing, myoelectric, cybernetics, prosthetic limb abandonment.

Aruguete, Marc

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Gokul Gopalakrishnan,
Evan Steeno,
Erin Trocke,
Marc Aruguete

Abstract Name: Fabrication of MEMS Filters for Applications in Rapid Prototyping and Biotechnology

Effective techniques for the separation and spatial manipulation of shaped microscopic particles are vital to applications in fields ranging from biotechnology to manufacturing. For instance, shape-specific separation can be used to isolate microbes and biomolecules. Printers used for rapid prototyping from composite materials could benefit from a device that constrains the orientation of microscale filler materials such as metals, glass or carbon fibers. The separation and alignment of shaped particles is generally challenging, since nonspherical particles can freely rotate and present different faces during motion. In this presentation, we describe the fabrication of lithographically patterned and anisotropically etched microscale pores in a single crystal silicon substrate, that are designed to overcome these difficulties. We present data on the engineering limitations and outcomes of this fabrication process and preliminary results from flow testing. These precision-engineering pathways show promise for both the shape-based separation of non-spherical particles as well as in controlling their spatial orientations.

Aruldas, Rachel

Institution: ***MN - University of Minnesota - Twin Cities***

Discipline: Psychology/Neuroscience

Author/Contributors:
Rachel Aruldas *Laura Orenstein* *Sade Spencer*

Abstract Name: Impact of Metformin on Cocaine Sensitization in GLT-1 and AMPK Phosphorylation in the Medial Prefrontal Cortex and Striatum

Cocaine is an addictive stimulant, with over one million people suffering from cocaine use disorder. Cocaine sensitization, an enhanced motor response to repeated, intermittent cocaine administration, impacts various protein levels in the corticostriatal reward circuit. In this circuit, the medial prefrontal cortex (mPFC) communicates with the Nucleus Accumbens (NAc) via glutamatergic projections which help regulate reward-seeking behavior. Cocaine self-administration downregulates glutamate transporter 1 (GLT1) gene expression, disrupting this communication. Another protein impacted by cocaine is Adenosine monophosphate-activated protein kinase (AMPK), which maintains cellular energy homeostasis. Cocaine sensitization reduces phosphorylated AMPK (pAMPK) in the dorsal striatum (dStr) and increases pAMPK in the PFC. Pain research suggests AMPK activation can regulate GLT-1 function in spinal cord, so we aimed to probe that relationship in the brain and determine if cocaine impacts AMPK GLT1 in the mPFC, NAc, and dStr. We have shown that introducing metformin to the NAc core decreases cue-induced cocaine seeking in rats. In this study, rats were given cocaine (15 mg/kg) or saline injections for six days and a challenge injection on the seventh day. They were divided into groups based on the initial and challenge injections they received: cocaine; cocaine (c-c; n=13), cocaine; saline (c-s; n=12), saline; cocaine (s-c, n=10), saline; saline (s-s, n=12). The locomotion of rats was tracked for forty-five minutes following daily injections. Brain tissue was extracted from the regions of interest and pAMPK and GLT1 levels were quantified using western blots. Results showed significantly higher pAMPK levels in the mPFC of the c-s group. Next, we aimed to determine if metformin pre-treatment could prevent cocaine sensitization and associated protein changes. This experiment will inform research into the impact of cocaine sensitization and the development of relevant pharmacotherapies.

Arvanites, Kristin

Institution: *IL - North Central College*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Kristin Arvanites

Abstract Name: **Designing a user-centric public transportation app for Chicago suburban trains**

Public Transportation in America has a poor reputation for a long list of reasons including Traffic Management, Large Fleet Costs, Long Commutes, etc. Users need a reliable system to convey real-time events as they travel. Current applications on the market do not provide users with the vital information that they need for their travels. I hope to explore these issues and create an application that allows user information contributions and provides exact timing notifications to identify city traffic and disruptions. User Experience Design is a design process that involves integrating and testing the interaction between human users and a product or website. In my UX case study, I will conduct several interviews and surveys of public transportation users. With these concerns in mind, I will build and design an interactive prototype of my own public transportation app. The questions I will study in this project are: What opinions or ideas does the public have regarding the use of the public transportation system of city trains? What do users believe could enhance the quality of these platform apps to aid their travels? This is why, from my self-conducted research as well as my readings on the matter, I am creating a new app dedicated to the public transportation of the Metra train line. I will fill in the gaps that the Ventra(a transit app for CTA, Pace, and Metra transportation) application is missing, and I will incorporate my own features and designs to fulfill the user's needs. I am building identity (the combination of visual and content choices that represent a company's personality) for the user experience through a UX case study (which includes user personas, empathy maps, site maps, low-fidelity wireframes, and an interactive high-fidelity prototype). Giving insight into the issues of users and tackling them meticulously and systematically.

Arya, Myrra

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: **Biology**

Author/Contributors:
Myrra Arya

Abstract Name: **Creation and Characterisation of Lipodystrophic Mutant Mouse Models with Lmna Variants**

Familial Partial Lipodystrophy 2 (FPLD2) is the most common form of lipodystrophy, a disease that has symptoms of selective loss, redistribution, and dysfunction of adipose tissues (fat). FPLD2 is caused by mutations in (lamin A/C), which encodes nuclear lamina proteins that are important for nuclear function and essential to control gene expression, but its role in adipocyte homeostasis is insufficiently understood. Mutations in lamin A/C cause several diseases (laminopathies) including lipodystrophy and progeria. Using CRISPR-CAS9 technology, our lab created mutant mouse models to imitate human FPLD2 disease and consequently gain a deeper understanding of the mechanism of adipocyte loss in FPLD2. We created 7 different mutant mouse models that were characterized by which exon in Lmna had been mutated- Exon 1 (T101), Exon 8, (R482Q, P485R, K486N), and Exon 11 (S573L , N582H, R584H). These are all mutations that are known to cause FPLD2 in humans, however, we had to verify if the same applied to mice. The phenotypes for mutant mice that we expected were lipodystrophy, cardiomyopathy, spinal/bone deformities, stunted growth, muscular dystrophy, arthropathy and progeria because these are phenotypes shown by human patients of FPLD2. We processed and compared the body weights and fat mass, collected serum, and dissected and weighed specific organs including the liver, hearts and adipose tissue. Analysis of the adipose tissue from the different groups of mice by histology gave us insight on the relationship between each specific mutation and adipocyte cell loss. We hypothesize that the mice that have adipocytes with mutant Lmna have significantly less adipose tissue and potentially more health problems as compared to the control group. These mice may develop abnormalities which mimic the pathology of FPLD2, which will help completely understand the mechanism of adipocyte loss in FPLD2 and discover a therapeutic target to help affected patients.

Atadurdyyeva, Aylar

Institution: ***KS - University of Kansas***

Discipline: International Studies

Author/Contributors:
Aylar Atadurdyyeva

Abstract Name: Farewell Privet, hello Salem: Decolonization and language reform in Kazakhstan

This research project will analyze the role of language in the decolonization of Kazakhstan and the attitudes young Kazakhs hold in relation to language policies. While USSR might not have appeared to be a colonizing power because of the communistic regime, the division into the centerand periphery and the unequal relationships between the two support the idea of a colonizing empire. The Central Asian countries continue decolonizing education and history while attempting to build an identity independent of the Soviet citizen. Scholars attempted to analyze decolonization from a Western perspective, yet the experiences of Central Asian countries show the importance of inviting local voices into the discourse to expand on the different forms decolonization can take,including derussification, Islamization, and Turkification. This project will include in-depth interviews with Kazakh students at KU and a survey young Kazakhs will access on Twitter. The project will then utilize thematic coding and statistical analyses to explore trends in regard to language policy, use, and decolonization. The expected result is a positive relationship between the preferred use of the Kazakh language and condoning of the USSR. Central Asia is a geopolitically important area due to the strategic location between Russia and China, and understanding the region is vital to peacekeeping in Asia.

Athie Teruel, Bruno

Institution: ***KY - University of Kentucky***

Discipline: Computer Science/Information Systems

Author/Contributors:
Sydney Chapman ,
Bruno Athie Teruel

Abstract Name: Virtual reconstruction of 2000-year-old Herculaneum Scrolls

The city of Herculaneum was buried by mount Vesuvius in 79 A.D. alongside Pompeii. Because of the way the city was buried by the pyroclastic flow, organic material was better preserved than in Pompeii and notably thousands of carbonized scrolls were found inthe famous library at the Villa dei Papiri. Most of these scrolls are damaged beyond recongnition and are too fragile to be read by traditional methods. Our research aims to improve and build upon methods to digitally study these scrolls without inflictingfurther damage on the artifacts. For the scrolls that were opened in the 1800s and now find themselves mostly broken into multiple fragments called 'Pezzi', multispectral photographs were taken by our team in Naples, England, and Paris. We have improved the process of image registration and blending for these multispectral images. As for the scrolls that remain closed, the Herculaneum project aims to CT Scan themand apply our virtal unwrapping pipeline to virtually unroll these scrolls, in a process similar to the virtual unrolling of the En Gedi scroll lead by Dr. Seales in 2015. The complexity of the Herculaneum scrolls, however, requires a new approach in segmentation and ink identification. We have developed a new tool to carry out preliminary segmentations of the scrolls and tested our algorithm. The research prospectus includes the application of the machine learning algorithm for carbon ink identification developed by Parkeret al. 2019 to our newly obtained segmented fragments in order to reveal the content of the two-thousand-year-old scrolls.

Atkins, Grace

Institution: ***AR - University of Arkansas***

Discipline: Communication Science and Disorders

Author/Contributors:
Grace Atkins

Abstract Name: Theory of Mind Development in Late Talkers

Theory of mind (ToM) is a basic cognitive skill defined as the ability to attribute mental states of oneself and of others.This concept that the thoughts in someone else's head might bedifferentfrom our own is brand new in developing brains and typically starts to form around ages 4-5 years old. Theory of mind is called a theory because we as people are just theorizing at what others could be thinking, we don't know if that is necessarily true. A child with the capacity to express someone's belief (or mistaken belief) can then guess what could happen next or the reasoning behind that belief.Every minute of every day we are taking in information about people, for example, the way someone acts or the things they say, and combining it with what we already know about their personalities to form our own theories about those around us. Theory of mind is important to Speech-Language Pathologists (SLPs) because a child first begins communicating to express emotion and explain behavior. Children who have late-talking development are missing out on that expressive social communication.The purpose of this study is to see if these children who might have delayed speech and language skills also have delayed development of theory of mind. I will construct 3 false-belief tasks to assess ToM in the children participating and see how the children with communication disorders compare to their on-level peers. SLPs could use this information to help integrate theory of mind tasks into therapy, so the child is getting those similar social-emotional interactions as their peers.

Atkins, Laina

Institution: ***VA - Virginia Commonwealth University***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Laina Atkins

Abstract Name: Disney Movies Released for Children Aged 5-12 between the 1990s and 2020s: The Evolution of the Princess of Color

Girls between the ages of 3 and 5 years watch an average of one Disney Princess movie per week. According to Bandura's Social Cognition Theory, the media children intake greatly impacts how children interpret societal roles and how they may approach them. This study examines the representation of culture and femininity in Disney movies, with both princesses and non-princesses, and how these representations might impact how young girls perceive their roles as women and how that would look in the world around them. In this comprehensive review, covering literature from 2008 to 2021, I explored the representation of culture and gender, and how young girls may replicate what they watch in Disney movies in their behaviors. Through reviewing this research and Disney princess movies, a correlation was made between the representation of various cultures and femininity in Disney movies and how young kids perceive and mirror those representations. The findings of the study included the following: Disney princess movies in the 90s leaned heavily on stereotypes of the new cultures they were portraying; culturally diverse princesses are perceived as less feminine, and therefore, less princessly; young girls portray characteristics of materialism, physical beauty, and princess-like posture; and young girls associate long, clean hair, rosy lips, big eyes, and a slim figure with beauty. Further research on the importance of media, specifically Disney movies, is needed to determine the next steps for protecting young girls from poor representation, and thus, protecting girls from replicating behaviors that restrict them professionally, socially, or in relationships.

Attia, Iman

Institution: ***EGY - The American University in Cairo***

Discipline: Computer Science/Information Systems

Author/Contributors:
Iman Attia

Abstract Name: A Comprehensive Survey of Android Malware Detection using Deep Learning Techniques

Among smartphones, Android is the most famous and widely used operating system with around 3 billion users worldwide which is three times more than iOS users. Android attracts not only users and application developers but also hackers and malware developers. Consequently, this can negatively affect many people, for example, by invading their privacy, stealing their credentials, or even acquiring sensitive information to ask the victim later for a ransom. It has become crucial to take necessary countermeasures against this rapidly growing android malware trend. Many research papers were conducted to discuss different algorithms used for analyzing and detecting these malicious attacks. Some showed superior performance than others; Nevertheless, this survey focuses mainly on Deep Learning techniques used in Android Malware Detection. Thus, we aim to present a comprehensive analysis of the recent research using Deep Learning techniques to analyze their strengths and limitations, commonly used datasets, and contrast it to other traditional methods used in the past. Also, we refer to some of the challenges in this emerging field, provide our perspective on future opportunities and directions and relate its effects to individuals and society.

Atuonah, Alvin

Institution: ***MD - Bowie State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alvin Atuonah *Keisha Medina Diaz* *Zhayne Hackett,* *Supriyo Ray* *Jason Abraham*

Abstract Name: Drug screening using Bioinformatics based tools to identify lead compounds against Naegleria Fowleri

Naegleria fowleri, also known as the brain-eating amoeba, causes primary amoebic meningoencephalitis (PAM), that affects the central nervous system (CNS). Patients with N. fowleri infection are unresponsive to current treatments with a survival rate of only 3%. Thus, it is essential to identify novel pharmacological targets and screen drugs. Naegleria fowleri protein library was explored to identify potential drug targets that have least similarity to any known human protein. Nfa1 (Uniprot: Q9NH76) was identified as one of the potential targets because it has no human homolog. Amoebae have cell surface features called feeding cups that are used to consume food, including host nerve cell membranes. Food cups are created during phagocytosis which includes the Nfa1 protein facilitating absorption through the cup-like structure. Nfa1 protein is involved in the formation of food vacuoles, locomotion, and importantly, also serves as an oxygen-binding protein. It is hypothesized that Nfa1 inhibition would arrest locomotion and restrict their foraging capacity, starving the amoeba to death. Based on the hypothesis, Nfa1 structure was predicted using Alphafold and the protein structure was minimized prior to docking. The minimized structure was validated using the Ramchandran plot. The Molprobity score was 0.83 with 2.5% of outliers towards C-terminal of the protein. Using various bioinformatic tools, binding pockets of Nfa1 were predicted. Drug library was screened after docking in Pyrx. Potential ligands that showed strong binding affinity and good pharmacokinetic properties were selected. Ligands were validated based on the blood brain barrier crossing, good GI absorption, ADME analysis, toxicity, and bioactivity profiling. The top compounds showed high binding affinities ranging from -7 kcal/mol to -9 kcal/mol. Selected compounds will be validated using toxicity assays against Naegleria and human cell lines for future studies.

Atwood, Thomas

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Alyssa Horton *Thomas Atwood* *Natalie Hanson*
Katelyn Moyer *Nicholas Beltz* *Saori Braun*
Jeffrey Janot

Abstract Name: The Cardiorespiratory Response while Nordic Walking vs. Regular Walking Among Middle-Aged to Older Adults

Background/Purpose: Around 60-80% of waking hours for adults are spent in sedentary behavior while physical inactivity accounts for 9% of all deaths worldwide. Furthermore, there is a strong dose-response relationship between physical inactivity and all-cause mortality, cardiovascular health, and metabolic health. Recently, Nordic walking (NW) has been introduced as a superior mode of exercise where one can increase energy expenditure due to increased engagement of upper body musculature while walking at a moderate intensity pace. NW is like regular walking except for using walking poles. Within established findings, most work has been done in a laboratory which can interrupt natural NW mechanics. Therefore, the purpose of this study was to measure the cardiorespiratory and energy expenditure differences in Nordic walking and regular walking in a field setting. Methods: Twenty middle-aged and older adults participated in this study. Each participant's initial session included Nordic walking familiarization, 10-m gait speed test, and a peak oxygen uptake (VO2peak) test. The two exercise sessions consisted of either NW or regular walking on an indoor track for 30 minutes. All metabolic variables were measured via the COSMED K5. Results: A paired-sample t-test revealed a significant difference between NW and regular walking for %VO2peak values ($p = .008$), kcal·min-1 ($p = .005$), and total kcal expenditure ($p = .001$). No significant difference was found for preferred gait speed ($p = .485$) between NW and regular walking. Conclusion: NW is superior to regular walking in eliciting a higher %VO2peak despite similar walking speeds, a higher kcal·min-1, and greater total kcal expenditure. In turn, these data agree with previous research and supports the use of NW to increase energy expenditure to potentially prevent the risk of one's metabolic and cardiovascular risk.

Augustine, Emma

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Psychology/Neuroscience

Author/Contributors:
McKinley Davis *Dylan Jensen* *Emma Augustine*
Daniel Ehlinger

Abstract Name: Adolescent social isolation stress enhances nicotine conditioned place preference and disrupts stress coping behavior.

Adolescence is a sensitive period in brain development that is marked by increased susceptibility to the effects of chronic stress, which may enhance vulnerability to neuropsychiatric conditions such as depression and substance use disorders. In the present study, we used an animal model to examine the effect of adolescent social isolation stress on coping behavior and nicotine reward. During the adolescent period from postnatal day (P)35-P49, male and female C57BL/6J mice were exposed to either social isolation (SI) stress or standard rearing (SR) conditions, as well as nicotine exposure (0.35mg/kg) four times between P35-P49 during a nicotine conditioned place preference (CPP) procedure. On approximately P50, stress-coping behavior was examined following a 6-minute forced-swim test (FST). Our behavioral results show that both male and female SI mice more rapidly develop nicotine CPP compared to SR mice, that SI mice exhibit increased levels of immobility in the FST, and that prior nicotine exposure during social isolation decreases immobility in the FST. These results suggest that adolescent social isolation stress enhances the rewarding effects of nicotine and negatively impacts stress-coping behavior. To determine whether adolescence is a sensitive period for these effects, ongoing research efforts are aimed at comparing these results to adult social isolation and nicotine exposure. Furthermore, we are examining stress-induced functional (c-fos expression) differences in the brains of SI versus SR mice in response to the FST via immunohistochemistry of the dorsal raphe ascending serotonergic system. Collectively, these analyses will help determine neurological correlates of adolescent susceptibility to the negative effects of chronic social isolation stress and inform our understanding of adolescent brain development and vulnerability.

Autrey, Madison

Institution: ***FL - The University of Tampa***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Madison Autrey

Abstract Name: Electrostatic Capture of Forensic Evidentiary Residues Using a Children's Toy

Crime labs currently rely on plastic swabs or chemical extractions to collect and analyze drug residues from surfaces. These methods require direct contact with the sample and can ruin important underlying evidence such as fingerprints and touch DNA. I am working on a non-contact sampling method; a sampling device that samples residues while being held over the surface of the evidence. Microscopic particles from residues on evidence are lifted using an inexpensive toy, a Fun Fly Stick, and a glass-sheathed metal needle. This device can also be coupled with a mass spectrometer for analysis with the electrified capillary held in front of the inlet to the mass spectrometer.A Fun Fly Stick has ~27kV of voltage with a negligible current that is applied to a metal needle. The metal needle is covered with a glass capillary, which is held 2mm over a surface for 30 seconds to capture solid particles from residues. The tip of the capillary is placed 4mm from the inlet of the mass spectrometer (Thermo LTQ XL). A voltage is then applied to the tip to generate an aerosol that ionizes captured analytes.Cocaine, methamphetamine, MDMA, alprazolam, caffeine, procaine, benzocaine, diphenhydramine, and hydrocodone were used for the initial tests. At microscopic levels of drug residue, there was a strong detection of signal with this technique of collection. My current work is focused on perfecting this safer, more effective, non-contact method of collection of these drug residues. This will allow for field work at crime scenes to be faster and not jeopardize any evidence left behind by criminals.

Avant, Anna

Institution: ***MI - Wayne State University***

Discipline: Biology

Author/Contributors:
Anna Avant,
Sumit Paudel,
Yifan Zhang

Abstract Name: Studying antibiotic resistance in Enterococcus with a One Health approach

One health is the connection between animals, humans, and the environment. Our study uses this concept to understand community-acquired antibiotic resistance using Enterococcus as a model. In an urban environment, animals have a great potential to be a reservoir for antibiotic resistance genes (ARG). Urban environments also contain a great deal of pollution from businesses and transit, leading to metal contamination of the nearby environment, seeping into soils, waters, and groundwater. This metal pollution places pressure on bacteria, leading to the development of metal resistance genes (MRG) and ARG. Our hypothesis is that wildlife exposure and MRG in an urban environment have a strong correlation with community-acquired antibiotic resistance. Enterococcus is a gram-positive bacteria found in the gut of humans and animals and has a high potential to transfer between these populations. Our study uses wildlife sampling, MRG, and ARG identification as well as the comparison of antibiotic-resistant Enterococcus strains of human and wildlife origin collected in metro Detroit. A total of 140 rodent and bird fecal samples were collected, giving 269 positive Enterococcus isolates. Eighty-one clinical isolates were recovered from outpatients at the Henry Ford Hospital. Antimicrobial Susceptibility Testing (AST) was performed for 16 antibiotics using Sensititre plates. Only 7 samples showed no antibiotic resistance. Multidrug resistance was demonstrated by 17% of isolates. The samples had the most resistance to lincomycin (89.55%), followed by quinupristin/dalfopristin (32.84%) and nitrofurantoin (17.54%). This study suggests the prevalence of antibiotic-resistant Enterococcus in the urban environment and the clinical importance of the findings. Further analysis is underway to compare animal and human isolates on Enterococcal species distribution and molecular subtypes.

Ayala, Sofia

Institution: *TX - The University of Texas Rio Grande Valley*

Discipline: Biology

Author/Contributors:
Sofia Ayala *Pushpa Soti* *Daphne Zapsas*
Vanessa Thomas

Abstract Name: **Environmental Variables Regulate the Patterns of Root Colonization Fungal Endophytes in Guinea Grass (Megathyrsus Maximus)**

Dark Septate Endophytes (DSE) and Arbuscular Mycorrhizal Fungi (AMF) are two endophytic fungi which have a mutually beneficial relationship with plants. DSE is an endophytic fungus that colonizesin primarily nitrogen-rich environments, but it is also known to colonize roots in nitrogen-limited areas. Similarly, AMF colonizes plant roots and flourishes in low resource environments. Both AMF and DSE optimize nutrient and water efficiency in plants while receiving sugars from the host plant. This relationship is influenced by environmental factors such as soil moisture, pH, organic matter, salinity, soil nutrients, and land use. In this study we analyzed the relationship between a forage grass Megathyrsus maximus (Guinea grass) and the two endophytes and the influence of environmental variables. Megathyrsus maximus is an invasive African forage grass species that escaped from its original confinement ofgrazing land and made its way into untended areas where it dominated over native species. Guinea grass can endure a variety of environmental and soil conditions; however, it is reported that the probability of their expansion increases linearly with soil moisture and nitrogen.Our analysis of roots and soil samples collected from 150 locations in South Texas Plains ecoregion show that the plant is heavily colonized by the endophytes both AMF and DSE and this relationship is influenced by soil moisture levels. AMF had a positive relationship with soil moisture while DSE had a negative relationship with soil moisture. Roots samples collected from areas with higher soil moisture had higher AMF colonization while roots from drier soils had higher DSE colonization. Our results show that Megathyrsus maximus can potentially outcompete the native grasses with its positive association with AMF and DSE. Thus, land managers looking to manage this plant should prioritize the plant-soil feedback in their management plan.

Ayala, Victoria

Institution: *UT - Weber State University*

Discipline: Nursing/Health Science

Author/Contributors:
Jonah Christensen *Julian Chan* *David Aguilar-Alvarez,*
Joanna Gautney *Victoria Ayala* *Jazmin Vilches*

Abstract Name: **Increased Intake of Alpha-Linolenic Acid is Associated with Higher Exam Scores**

Roughly 60% of the human brain is fat. Essential fatty acids (EFAs) Linoleic and alpha-linolenic acids are critical for building the brain's structure, synthesis of neurotransmitters, and developing the visual cortex, among other important functions.This study investigates how EFAs intake may affect brain function, and if these effects are reflected in student exam performance. We hypothesize that increased consumption EFAs will be associated with higher test scores. An analysis of cognitive function based on exam scores was conducted on 602 student participants attending Weber State University. Two-day diet records were collected. Grams as well as percentages of recommendation consumed based on required calories of linoleic and alpha-linolenic EFAs were calculated from the diet record using Diet and Wellness Plus software. The data analysis was completed using RStudio. Models were created using linear regression and variables were removed based on p-value using backward elimination. The best model created included the following variables: LinoleicCal% (the fraction of the total calories required provided by linoleic fatty acid), α-LinolenicCal% (the fraction of the total calories required provided by alpha-linolenic fatty acid), and the interaction between the previous two variables. Exam scores increased by 5.43 times, for each additional α-LinolenicCal% percentage increase ($p = 0.01$). For each percentage increase on both LinoleicCal% and α-LinolenicCal%, exam scores decreased by 0.27 times ($p = 0.02$).Our results show that it is not only the amount but also the ratio in which these two fatty acids are consumed that influences exam score performance. This is in accordance with previous studies showing that intake of omega-3 polyunsaturated fatty acids are inversely related with risk of impaired memory and flexibility in middle aged adults.

Ayers, Alexander

Institution: ***GA - University of West Georgia***

Discipline: Computer Science/Information Systems

Author/Contributors:
Alexander Ayers,
Shawn Carter,
Laquinton Chun

Abstract Name: Self-Guided Historic Tour of University of West Georgia Campus

Augmented reality (AR) opens the door to novel ways of conveying content in its physical context. This project explores the potential of AR to showcase the history of the campus of the University of West Georgia, and gives recognition to lesser known portions of its history. We have designed and implemented a mobile application that serves as a self-guided tour through the university's historic front campus. The application was built in Unity and uses Vuforia Engine for the augmented reality component. Three-dimensional models were built in Autodesk Maya. A campus map displays the user's current location and points of interest. Each point of interest can be tapped to learn more about it. The featured information includes pictures, a textual description, audio, and a three-dimensional model of a former building and historic objects. The historical objects were provided by the History department in an interdisciplinary collaboration to ensure accuracy and a diversification of perspectives. For the AR component, the application employs image targets that, once scanned, showcase historic information in its physical context. For example, an academic building that does not exist any more is displayed at its former location. Since the application is heavily user-interface driven, it is designed using event-driven architecture to ensure strong usability for the user. Additionally, our application uses the Singleton design pattern for our application data pertaining to the points of interest. For a demonstration, we have a representative building that has athree-dimensional model, audio recording of a description,and images of the interior of the building. While AR is used already in education, training, and commercially, it has relatively little use in historic campus tours. Our application can serve as a framework for other historical campus tours that may benefit from augmented reality.

Azarshin, Daniel

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Daniel Azarshin *Dorcas Yeoh* *Bryan Brown*

Abstract Name: Does Correcting Errors Improve Graduate Students' Ability to Write Accurate Stuttering Treatment Plans?

For the past few decades, speech-language pathologists and graduate students have continued to report feeling under-prepared and having low self-efficacy in regard to working with adolescents who stutter. In an effort to increase self-efficacy and preparedness, two groups of graduate students participated in a class activity where they worked in teams to identify, explain, and correct unambiguous errors in case studies involving adolescents who stutter. The errors could be goals and activities that do not align with client values or goals that do not align with treatment protocol (e.g., stuttering modification, fluency shaping or a combination approach). To measure progress, students completed a knowledge and self-efficacy self-assessment and designed a treatment plan for an adolescent who stutters at two different times. Once before the error-correcting activity and again after the activity. Self-assessments were designed to measure the students' self-perceived knowledge and self-efficacy of their ability to provide treatment to people who stutter. Treatment plans were completed so that the researchers could assess the students' understanding of treating stuttering. Treatment plans were scored by a rubric that examined internal consistency, appreciation of client values and rationale. The research team reached consensus during scoring. Differences in survey ratings and treatment plan scores pre-activity and post-activity were analyzed after the course was completed, to maintain anonymity.Data analysis is ongoing. Our preliminary research findings show that there are 10 domains where the students' knowledge increased from pre-assessment to post-assessment. These domains include: reducing frequency, reducing severity, reducing tension, identifying disfluencies, speech goals, thought goals, emotion goals, bullying assertiveness, and social goals. Students also reported to have better self-efficacy in regard to working with children who stutter after the error-correcting activity. We are presently in the midst of analyzing the treatment plans. Data analysis will be complete by the end of the semester.

Azmee, Abm. Adnan

Institution: ***GA - Kennesaw State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Ibrahima Gueye,
Abm. Adnan Azmee,
Md Abdullah Al Hafiz Khan

Abstract Name: Predicting Malware attacks with the help of Machine Learning

Malware has become a more widespread problem alongside the fast growth of technology. Malware is any unwanted software placed in the system without knowledge or consent for performing malicious activities. Despite the widespread adoption of novel preventative procedures, the number of malware attacks steadily rises yearly. These attacks can spread through networks and disrupt any operation, leading to many cyber thefts, leaked or destroyed data, and, most often than not, ransom. Unfortunately, many of the anti-malware systems that are available today are only able to defend the system from malware that is already known. To address this problem as part of this research, we constructed a model that uses the predictive power of machine learning algorithms to estimate the likelihood that a computer will become infected with malicious software. Data from Microsoft Defender, a built-in antivirus solution for Windows, was utilized to compile the publicly available dataset used in this research, which includes information about hardware and system software installed on Windows machines. We envision that with the assistance of our machine learning models application, we will be able to reduce the number of compromised systems significantly.

Azmy, Sylvia

Institution: ***EGY - The American University in Cairo***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Sylvia Azmy

Abstract Name: Queer Places and Hierarchies in the Book of Strangers by pseudo-I?fah?n?

In pseudo-Iṣfāhānī's Book of Strangers (Adab al-ghurabāʾ), a 10th-century collection of graffiti-poems and stories about feeling out of place, the narrator intentionally selects a specific story of his intimate relationship with a young man of high status. I offer a close reading of this text with sensitivity to space and status in order to show how the protagonists queer the private-public divide and the power dynamics between them. Two moments of crisis take place in this story. The first occurs when the narrator, who often waits by the young man's place, broadcasts his love in a poem written on the wall outside. In this moment of tension, we observe the narrator queering the space they share by choosing to out their private intimacy. The young man's rebuke reveals the resilience of the well-established and socially enforced hierarchy that separates them. The final crisis is the imprisonment of the young man's father. This incident causes the young man to take refuge with the narrator at his house where they exist unexpectedly as equals. In this moment of reversal, the protagonists create a queer space where they reject the well-established social hierarchy. By showing that space and social status are queered by acts of individual and group resistance, I draw attention to the limits of the acts vs identities paradigm as a frame for understanding Classical Arabic cultural representations of same-sex love and desire.

azzouz, Ryan

Institution: *TX - Midwestern State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ryan azzouz,
Wujie Zhang

Abstract Name: **Development of Pectin Microspheres for Pulmonary Drug Delivery**

The delivery of drugs to the lungs through inhalation is a relatively complex process due to the natural defensive mechanisms of the respiratory tract having the ability to remove or inactivate them. Size plays a substantial role in the fate of inhaled particulates: large ones are deposited in the upper respiratory tract and small ones are simply exhaled. This study aims to develop biocompatible microspheres that are 3 μm in diameter and can encapsulate pulmonary drugs to allow for their delivery to deep portions of the lungs. Pectin, a polysaccharide polymer derived from citrus and apple peels, was chosen as the microsphere material due to its biocompatibility and degradability in solutions replicating physiological environments. Electrospray was used to develop the pectin microspheres with parameters such as voltage, feed rate, gauge size of syringe tips, and distance between syringe tip and collection sheet being defined as significant contributors to the resulting size of the microspheres. Other parameters such as the ratio of pectin: PEO solution significantly affected the uniformity and morphology of the resulting pectin microspheres. The rate of pectin microsphere degradation can be altered through coating with polymers, such as chitosan or gelatin. Microspheres were modified by coating with either of these materials in order to improve the stability of microspheres in physiological conditions.

Babasin, Sean

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Emma Loucks *Sean Babasin* *Jordan Deau,*
Beth Kondro *Michael Holly*

Abstract Name: **Low Cost Filter Media for the Removal of Phosphorus in Agricultural Runoff Treatment Systems (ARTS)**

Seasonal hypoxia of lakes in the Midwest, Gulf of Mexico, and surface waters around the world as a result of excessive algal production, has a detrimental effect on the local aquatic species, environment, and recreation. Despite investments in point source reductions, seasonal hypoxia is persistent, in part due to non-point agricultural sources of phosphorus (P) (35% of total P load to Lake Michigan). Agricultural runoff treatment systems (ARTS), consisting of sedimentation basins and phosphorus removal structures, are an effective field treatment to reduce nutrient pollution. Numerous media (80) for phosphorus removal structures have been investigated for their P removal potential and the hydraulic conductivity; Ca, Fe, Mg and Al content of media are important factors. Reactive media derived from waste products would create a product from waste, extending time prior to disposal, supporting a circular economy. Waste residuals (e.g. drinking water treatment residuals, wood waste, vegetative waste) will be modified (through metal additions, heat treatment, pelletizing, and binder addition) for and evaluated for dissolved P removal from agricultural runoff.. Treatment potential of modified waste media will be measured using flow through lab scale reactors constructed out of 0.75-inch diameter PVC pipe. Columns will be completed in triplicate for each media. Influent and effluent samples will be collected every 5 to 10 hours until effluent P is 50% of influent P. Ortho-phosphorus will be measured in collected samples using a discrete analyzer (Seal AQ300) at UWGB. Media will be designed to maximize P sorption capacity, hydraulic conductivity, mechanical strength, efficacy in high flow systems (10 min retention times), and reuse potential; minimize toxic side effects, energy consumption, and cost, critical to adoption. Results from flow through analysis will guide selection of reactive media deployed for field evaluation.

Bachman, Luke

Institution: ***CA - California State University - Fullerton***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Luke Bachman,
Jonathan Ayala,
Carlyle Ezpeleta

Abstract Name: Assessment of Hardware Obfuscation for Hardware Oriented Security

Due to the various threats in the globalized semiconductor supply chain, the security of integrated circuits (IC) has become a serious concern. Among the well-recognized security threats, the growing hardware intellectual property (IP) piracy and reverse engineering challenge the traditional chip design and fabrication. Obfuscation is a technique that makes comprehending and reverse-engineering a design difficult and is a promising solution for securing hardware IP against various attacks, such as reverse engineering, piracy, and tampering. This work utilizes the four most popular obfuscation - random logic locking, strong logic locking, anti-SAT logic cone, and cyclic obfuscation techniques. We implement these obfuscation techniques with different key sizes ranging from 32 to 128 bits using Xilinx Vivado and Artix-7 FPGA board to analyze the area and power consumption. Further, we compare the attack resilience of these techniques against powerful SATand key sensitization attacks. Our results show that the anti-SAT technique consumes the most area and power because of extra key input; however, the anti-SAT method is the most resilient against SAT and key sensitization attacks.

Bae, Hyunoh

Institution: ***MN - University of St. Thomas, Minnesota***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Hyunoh Bae,
Katherine Acton

Abstract Name: Composite Material Modeling Using a Modified Finite Element approach to Characterize the Mesoscale Properties of Statistical Volume Elements

In homogeneous and isotropic materials, the constitutive matrix [C] which represents mechanical properties of a material in elastic region can be determined using Young's modulus and Poisson ratio. However, the constitutive matrix [C] of composite materials can be a computational, and even an experimental challenge because most composite materials have heterogeneity and anisotropy, which means their mechanical properties depend on the location and direction of measurement. Although finding composite materials' mechanical property [C] is very hard in mesoscale composite materials, the composite materials are widely used in industries because they are often lighter, stronger, and cheaper than simple materials. One method to address the multiscale problem is to use Representative Volume Elements (RVE) to find the smallest material volume that can represent the whole material. The composite's heterogeneity is "homogenized" (essentially averaged or made "smooth") by the RVE. However, some material behaviors, such as fracture, are very sensitive to regional anisotropic and heterogeneous material behaviors and cannot be described effectively by RVE. To overcome this problem, researchers have tried to assign anisotropic and heterogeneous material properties at an intermediate, mesoscale. One of the methods of analyzing mesoscale composite material is the Statistical Volume Element (SVE) method, which can be used to determine a statistical representation of the constitutive matrix [C].This research approached SVE analysis via the reduced stiffness matrix to improve efficiency on simulation. The stiffness matrix is generated through Abaqus, a commercial finite element analysis software, then, all information from Abaqus such as boundary node numbering, coordination of nodes, and reduced stiffness matrix are output. Strain-displacement mappings are calculated using successive perturbation of boundary node coordinates. To approximate the constitutive matrix of each SVE, the energy equation can be solved using various boundary conditions simultaneously. These approximated constitutive matrices form a statistical

Bagasra, Anisah

Institution: ***GA - Kennesaw State University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Janna Shahout,
Anisah Bagasra

Abstract Name: Pathways to Seeking Mental Health Services Among Muslim Americans.

What are the pathways that Muslim Americans have taken to utilize mental health services? What factors impact Muslim Americans' help-seeking behaviors? The research surrounding this topic found that acculturation to Muslim versus American values affected the likelihood of Muslim Americans reaching out to mental health services (Haque et al., 2019). The research demonstrates how Muslims who are less likely to seek help found services like group therapy, therapists of similar/same background, and therapy through imams and/or mosques the most approachable (McLaughlin, Ahmad, Weisman de Mamani, 2022). The major gap in the literature is the lack of research on the populations that have successfully sought out mental health services and the pathways in which they did so. This study aims to fill that gap in the literature. The data will be collected using a survey distributed through Qualtrics online. Muslim Americans who are 18 years or older and have used some form of mental health services are our target audience and will be recruited through digital and print flyers and social media. The study's expected findings will be that those of the younger generations and those who are more acculturated will have utilized mental health services more than those of the older generation who are not as acculturated. Expected findings also see religiosity impacting the individual's likelihood of using mental health services. The survey will be distributed and data collection will occur in the winter 2022-2023. The data will then be analyzed in early Spring of 2023.

Bahena, Fernanda

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

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Abstract Name: Identifying Cognate RNA Sequences of Non-Structural Protein 9 in SARS-CoV-2

As an RNA+ virus, SARS-CoV-2 infection (COVID 19) leads to direct translation of viral RNA to produce non-structural proteins (Nsp) responsible for viral replication. For example, Nsp 7 and 8 are thought to act as a helicase, Nsp 9 as a single stranded RNA binding protein and Nsp 12 as the replicase essential to the proliferation of the virus. Studies of homologous, Nsp 9 proteins in HSV, MERS, and SARS-CoV-1 indicate this protein binds both DNA and RNA sequences. In SARS-CoV-2, Nsp 9 contains an unusual OB, greek key motif thought to keep RNA single stranded for efficient replication in other viruses. Together these results suggest, Nsp 9 may function in SARS-CoV-2 to keep the viral RNA linear for replication by Nsp 12; however, little is known about the RNA binding requirements or structural contacts and interactions in this protein-RNA complex. Tryptophan fluorescent studies of Nsp 9 have been developed to identify cognate RNA binding sequences and structures. Initial studies indicate binding of an RNA pseudoknot structure in the 3'-untranslated region of the viral RNA. Further analysis of RNA structural requirements for stable Nsp 9 binding will be important in further deciphering the role of Nsp 9 in SARS-CoV-2 as pseudoknot structures in the 5' and 3'-UTR have served as a switch from viral RNA translation to replication and may serve as a handle for control of this ever infecting and mutating virus.

Bain, Sophia

Institution: ***CA - Chapman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Sophia Bain

Abstract Name: Submitting to Memory in "The Night Porter": Memory Work as Disruption of Natural Attitude

This paper synthesizes the existing scholarship on Liliana Cavani's 1974 film The Night Porter with the existentialist and phenomenological ethics of Simone de Beauvoir and memory studies to analyze how the film implicates our natural attitude toward women's submission via Lucia's submissive situation. The film begins when Lucia (Charlotte Rampling), a death camp survivor, and Max (Dirk Bogarde), a former SS officer, bump into each other by chance in 1957 Vienna. The two begin to replay the sadomasochistic sexual relationship they had during Lucia's internment, revealed through a series of flashbacks throughout the film in which their dominant/submissive dynamic plays out. Specifically taking up Beauvoir's existentialist position that we are always subjects for ourselves and objects for others, and that submission appears as a destiny to women, as understood by philosopher Manon Garcia, I analyze Lucia's relationship with memory in the film as similarly ambiguous to this relationship with Beauvoirian subjectivity. I argue that women's (via Lucia's) recognition of the ambiguity of memory, which comes from their necessitated recognition of ambiguity in subjectivity, is essential in performing Annette Kuhn's idea of "memory work," which the film asks us to perform by calling into question the historical situation of women's submission. Finally, I consider how Kuhn's memory work is related to the disruption of Husserlian natural attitude, and how Cavani's film requires this disruption of natural attitude toward our memory of women's submission to appreciate the film as moving us toward a future feminist situation for all women.

Bair, Kristen

Institution: ***PA - Susquehanna University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Kristen Bair

Abstract Name: The Role of Inhibition in Convergent and Divergent Thinking

Creativity is a valuable skill that is cherished in nearly every domain of life. Research in neuroscience and psychology has attempted to understand the physiological states and cognitive processes underlying creative thinking abilities, focusing primarily on divergent and convergent thinking. Divergent thinking (DT) involves the production of multiple possible solutions while convergent thinking (CT) requires finding the single, best answer to a problem. Prior research suggests a positive correlation between DT and depleted cognitive inhibition. However, considerably less attention has been given to the relationship between inhibition and CT. Although seemingly counterintuitive, inhibitory control could play a vital role in certain convergent tasks by suppressing salient, yet irrelevant, stimuli that may prevent generating novel ideas. For example, Sio et al. (2022) found that the number of strong, irrelevant associates predicted problem solving difficulty in Remote Associate Test (RAT) problems.In the current study, we explore how the depletion of inhibition affects both CT and DT problem solving. Participants will be randomly assigned to either a control or inhibition depletion condition. The latter will complete the computer-based Sustained Attention to Response Test (SART) to deplete inhibitory control. The controls will complete a similar, but non-inhibitory, computer-based task of simply pressing a button regardless of the stimuli. Participants will then complete both a DT and CT task, the Alternative Uses Test (AUT) and a set of RAT problems, respectively. The order of tasks will be counterbalanced across participants. We hypothesize that weakening inhibition will facilitate the generation of creative ideas in the DT task (AUT). In contrast, we predict that that solving RAT problems will be more challenging with depleted inhibition, particularly for RAT items with extensive irrelevant associates, as these may block retrieval of the right answer.

Bajwa, Simar

Institution: *GA - University of Georgia*

Discipline: Psychology/Neuroscience

Author/Contributors:
Simar Bajwa,
Nathan Gonsalves,
Lohitash Karumbaiah

Abstract Name: **Glycomaterial Implants Facilitate the Recovery of Forelimb Motor Function after Severe Brain Injury**

Severe traumatic brain injuries (sTBIs) result from blunt force and penetrating brain trauma that cause long-term brain volume loss and functional impairments. There are currently no approved interventional therapies to prevent brain volume loss and dysfunction in sTBI patients. We hypothesized that acutely implanted 3D brain-mimetic constructs will prevent brain volume loss and facilitate recovery of reach and grasp function in rats. In order to test this hypothesis, we performed intracortical engineered chondroitin sulfate (eCS) hydrogel implantations acutely (48h) after sTBI lesions in rats. To mimic clinically relevant mass lesion evacuation procedures of contused tissue, we induced controlled cortical impact (CCI) injuries to the rostral forelimb area (RFA; M1/M2 cortex) followed by biopsy suction ablation (SA) of contused tissue at 48 h post-CCI. Forelimb reach and grasp function was evaluated on a skilled reach task (SRT) every week for five weeks post-CCI. At Week 5 after CCI, animals underwent retrograde axonal tracer (Fluorogold) injections for terminal axonal tracing studies. Our results from SRT demonstrated significant deficits in reach to grasp activity of TBI only (CCI + SA) groups compared to the Sham (craniotomy only) group at Week 4 and 5 post injury. Hydrogel treated animals (CCI-SA-eCS) showed significantly improved reach and grasp performance efficiency and a reduced assay duration when compared to TBI controls at 5 weeks post injury. Overall, these data demonstrate that eCS hydrogel implants induced recovery of forelimb motor function sub-acutely after sTBI. Ongoing work is focused on assessing neuronal activity and plasticity of reach and grasp circuitry.

Baker, Abigail

Institution: *GA - University of West Georgia*

Discipline: Chemistry/Materials Science

Author/Contributors:
Abigail Baker,
Shaye Snajkowski,
Megumi Fujita

Abstract Name: **A green chemistry project: catalytic reactions in supercritical carbon dioxide**

Green chemistry is a development and practice of environmentally friendly and safe ways to carry out chemical processes. “Greening” of the chemical industry can be achieved by adopting new alternative methods with less toxic materials involved, less wastes produced, less energy required, and altogether safe to humans and environment. One of the big challenges in the current chemical industry is the use of volatile organic solvents. Solvents are used to mix multiple reagents to react, and when the reaction is over, the solvent is removed by evaporation. This convenience comes with a price: the vapor easily escapes to the environment and causes air pollution. Furthermore, most volatile organic solvents are either flammable or toxic, or both, and is a hazard to workers. Supercritical carbon dioxide (scCO2) is a possible environmentally benign alternative to traditional organic solvents. ScCO2 is abundant in nature, non-toxic, and a renewable resource, unlike common organic solvents, which are mostly produced from non-renewable petroleum. CO2 is gas at a regular temperature and pressure, and a solid at a low temperature below -77 degrees Celsius (known as dry ice). When CO2 is placed under high pressure (1071 psi) and a moderate temperature above 31 degrees Celsius, it becomes a supercritical fluid. Supercritical fluid is dense like a liquid and can dissolve solutes, but it is also like a gas with low viscosity, which makes solutes move fast and collide to react efficiently. We are testing scCO2 as a reaction solvent for chemical reactions involving different types of catalysts: zeolites, immobilized enzymes, and homogeneous transition metal catalysts. We are examining whether the reactions catalyzed by these catalysts are as efficient in scCO2 as in traditional volatile organic solvents, or better, and whether scCO2 has effects on the selectivity of the reactions.

Baker, Andee

Institution: *MT - Montana State University - Bozeman*

Discipline: **Public Health**

Author/Contributors:
Andee Baker,
Sally Moyce

Abstract Name: **Community Health Workers: Training Course Design and Testing**

Background: Montana has seen an increase in the Latino population – as much as 189% in some locations in the last decade. The rapid growth of this monolingual, Spanish-speaking population means that many health needs are not being met. As many as 80% lack health insurance. Promotores de Salud, or Community Health Workers (CHWs), are members of the community who are specially trained to provide a bridge between individuals and the healthcare system, thus closing the gap between the communities and healthcare. Currently, the Montana Office of Rural Health offers virtual training in English. No program exists for the Spanish-speaking community.Methods: Working in a multi-disciplinary team and with a trained promotora, we created and tested a Spanish-language Montana-specific online training course for CHWs. The course is four modules and meets nationally-established training criteria for CHWs. Trained promotores evaluated the course for content, accuracy, and acceptability using an online survey.Results: Overall, responses were positive, and respondents ranked our course as “better” or “much better” than a nationally-recognized virtual training course. However, some feedback suggested further edits and language refinement. Therefore, we hired one of the promotoras, a native Spanish-speaker from Peru, to revise the final product.Conclusions: The creation of this course will have a drastic impact on the public health of the Latino community in Montana. We anticipate our course will strengthen the Spanish-language public health workforce by increasing the number of trained CHWs and thereby increasing access to health resources. We expect to publish and disseminate the course in winter 2023.

Baker, Dylan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Education**

Author/Contributors:
Madelyn St.Pierre,
Dylan Baker,
Maria Cruciani

Abstract Name: **Introduction and Progression of Early Algebra in the Beast Academy Comprehensive Curriculum**

As students progress through elementary mathematics curricula, arithmetic is the main point of focus. However, a call for algebra to become a component of the elementary mathematics curriculum has gained momentum because implementing algebra in early elementary curricula increases student understanding of algebraic concepts and eases the transition to deductive algebra later in mathematics. The Beast Academy comprehensive curriculum was developed with a focus on problem solving through monster characters in a graphic novel who demonstrate different ways of mathematical thinking. Beast Academy incorporates problems where students engage with algebraic thinking earlier than suggested in the Common Core State Standards and continues to incorporate problems which emphasize algebraic thinking through practice problems in subsequent levels. This progression introduces students to algebraic language while enhancing their current learning. We are interested in the trajectory of problems which build algebraic thinking as well as problems in which students are doing algebra. We will present our findings on how this curriculum introduces algebra to students, and how current literature suggests this will impact student learning outcomes.

Baker, Isabella

Institution: *MD - Towson University*

Discipline: **Political Science**

Author/Contributors:
Isabella Baker

Abstract Name: **From Transitions to Catastrophes: UNICEF and the United Nations at Cross-Purposes**

With an alarming rate of global increase in armed conflicts, environmental disasters, poverty, and exploitation, all intensified by the COVID-19 pandemic, the need for emergency international humanitarian action is more important than ever. Organizations like UNICEF have been successful responding to and alleviating the effects of humanitarian crises and are in a unique position to provide aid to victims of humanitarian emergencies.Although UNICEF has made extraordinary accomplishments in its efforts to provide aid to countries experiencing national emergencies, the UN is not as effective in its efforts to physically intervene in other states via peacekeeping. The official purpose of UNICEF is to promote and protect the rights of children and women everywhere; however there is a dichotomy between the official rhetoric of UNICEF and the actions of the UN's peacekeepers. For example, in countries like the Central African Republic, UNICEF has provided substantial aid which helped many women and children since the violence that erupted in 2013, but the follow-up UN peacekeeping mission had the opposite effects of enabling violence against the same women and children, further exacerbating the exploitation of those whom UNICEF had pledged to protect.This paper explores the tensions between UNICEF and UN peacekeeping actions. To examine these cases, I will utilize UN, UNICEF, and peer-reviewed scholarly sources to consider their quantitative and qualitative evidence and evaluations. Overall, this project hopes to reveal the tension between UNICEF and UN actions and ways to resolve these tensions, so that I can shed light on how the UN may more effectively pursue its human rights and security goals. By examining different examples of UNICEF's successes and failures where UN peacekeepers were present, this paper seeks practical solutions to the UN's overall challenge of providing emergency aid while protecting the rights of children and women.

Baker, Josh

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Josh Baker,
Lyle Ford

Abstract Name: **A Python Program for Visualizing and Determining the Forces in a Statically Determinant Truss**

Solving for the internal and support forces of three-dimensional statically determinant trusses is straightforward though time-consuming. The solution process is algorithmic and well-suited for a computational approach. Using VPython and Python's Numpy linear algebra package, wehave created a Python program to calculate the forces in the members of a statically determinant three-dimensional truss, the support forces on it, and visualize them.The program reads an input file that contains the location of the joints, the members connecting the joints, the support structures holding the truss in place, and the external forces on the truss. The truss is visualized using VPython's rendering tools allowing the user to easily change viewing perspective. The members are color coded to indicate whether they are in tension, compression, or are zero-force members, which enables a direct qualitative observation of the stresses on the truss. Numerical results are saved to an output file and can also be displayed on the rendering of the truss. The result of this computational approach is a coherent display of the truss and the relevant forces obtained in an efficient manner, a result that would be tedious to obtain by hand.

Baker, Nicole

Institution: *IL - North Central College*

Discipline: Biology

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Nicole Baker,
Ian Rosales,
Lucia Vera

Abstract Name: **Quantifying the Relationship Between Arbuscular Mycorrhizal Fungi and a Native and Invasive Thistle**

Our research explored the relationship between arbuscular mycorrhizal (AM) fungi and two prairie plants – the native Pasture Thistle (Cirsium discolor) the invasive Canada Thistle (Cirsium arvense). AM fungi associate with the majority of plants and assist in mineral nutrient uptake. In return, they receive photosynthetically fixed carbon from host plants. Their relationship with plants can be quantified by assessing dependence upon and responsiveness to AM fungi. Dependence is defined as the plant's inability to grow without AM fungi while responsiveness is the growth difference between inoculated and non-inoculated plants. We hypothesized that Pasture Thistle would have a stronger responsiveness and dependence on AM fungi than Canada Thistle because of the degraded mutualism hypothesis, which states that invasive species do not associate with local mutualists as closely as native plants. To test this hypothesis, we grew plants with and without AM fungi at ten different soil phosphorus levels, with twelve replicates per treatment. We measured the longest leaf length and height weekly, and after 10 weeks of growth, determined overall root and shoot biomass. We found that Pasture Thistle and Canada Thistle could both grow without AM fungi. Pasture Thistle was more responsive to AM fungi, growing 37% better when inoculated than when not inoculated, while Canada Thistle, showed a negative responsiveness. These results support our hypothesis that the invasive species would have a degraded mutualism with AM fungi. It is likely Canada Thistle lacks a strong relationship with AM fungi because it grows in disturbed areas where there is a low AM fungal presence. We also found that Pasture Thistle was most responsive at a soil phosphorus level similar to that in its native range, suggesting that it likely has a shared evolutionary history with AM fungi.

Balasani, Shreya

Institution: *VA - Virginia Commonwealth University*

Discipline: Public Health

Author/Contributors:
Shreya Balasani

Abstract Name: **Increasing Age and Hypothyroidism: Heightened Risk for Older Gujarati and Rajasthani Indian Vegetarian Women Due to Extended Exposure to Phytoestrogens**

Subclinical hypothyroidism is defined by an elevated Thyroid-Stimulating Hormone (TSH) with normal levels of free thyroxine (T4). 11% of the Indian population is affected by hypothyroidism, which is alarmingly high when compared with the prevalence in other countries such as 2% in the UK and 4.6% in the USA. Although many external factors, such as cyanogenic compounds and the unregulated use of pesticides, contribute to this high prevalence, one contributing factor may be India's large population of vegetarians. This review aims to explore how both a vegetarian diet and increased exposure to this diet may heighten the risk for hypothyroidism.Plant-based proteins are extremely common in a vegetarian diet; soybean, in specific, is a popular and high-quality source of plant-based protein. Due to soybean's affordability and high protein content, India ranked fourth in the domestic consumption of soybean worldwide in 2021. Soy and soy-based products are a major source of isoflavones, which are a specific class of phytoestrogens. After reviewing literature published by experts in the fields of public health, nutrition, and endocrinology, a link between the consumption of phytoestrogens and an increased risk for hypothyroidism was found. To illustrate, studies on isoflavones indicate that phytoestrogens increase estrogen levels in the body. In addition, studies on hypothyroidism have found a connection between increased estrogen levels and the onset of hypothyroidism.Based on the stated studies, this research proposes that an increased exposure to a soy-centric vegetarian diet, among other external factors, may cause older Indian vegetarian women to be more susceptible to hypothyroidism. Due to these findings, more options and research regarding a balanced vegetarian diet and other protein alternatives should be considered by nutritionists and physicians.

Baldus, Inga

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Inga Baldus,
Raquel Espin-Palazon,
Abbigail McCune,
Clyde Campbell

Abstract Name: **Myeloid Differentiation in stat3 Knockout Danio rerio**

A significant portion of the United States population is affected by blood-based cancers. The American Cancer Society estimates that there will be about 20,050 new cases of acute myeloid leukemia (AML) in the year 2022 (Key Statistics for AML). AML is the rapid production of immature myeloid cells by the bone marrow, which lacks the typical myeloid cell functions of clearing infections or promoting tissue repair. Macrophages and neutrophils differentiate form myleoid progenitor cells. The developmental pathway of macrophages and neutrophils has been researched to produce new therapies and more effective treatments for AML. In previous experiments, the inflammatory protein granulin has been identified as an inflammatory factor necessary for myeloid cell development. The grna gene is the zebrafish ortholog to mammalian Granulin (GRN). Using bulk RNA sequencing, it was indicated that grna expression results in an upregulation of stat3 expression. Previous data has shown that grna knockdown using a gene specific morpholino significantly reduced macrophage and neutrophil numbers (Campbell et at., 2021). We expect to validate the morphant data with a mutant stat3 zebrafish line. I will utilize whole-mount in situ hybridization (WISH) and fluorescently tagged transgenic zebrafish witha mutant stat3 to visualize the number of myeloid cells produced. Myeloid cell numbers are expected to decrease with the loss of functional Stat3 expression, similar to that seen in grna mutant zebrafish. Understanding the pathway of myeloid cell production could lead to improved AML therapeutics.

Baldwin, Emily

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Emily Baldwin *Lilianna Shank* *Chloe Hendrickson*
Claire Hoge *Sasha Pankratz* *Tommy Atwood*
Alyssa Horton *Terri Nordin* *Marquell Johnson*
Saori Braun

Abstract Name: **Impact of a Short-Term Virtual Exercise Program on Various Bouts of Sitting during Overnight and Non-overnight Weeks among Family Medicine Residents**

Study Purpose: The purpose of the study was to examine the impact of a three-week virtual exercise program on the varying bouts of sitting behavior during overnight shifts week and non-overnight shifts week among family medicine residents. Methods: Thirteen participants ages 30.75 ± 3.98years were recruited and were asked to wear an inclinometer device on the mid-thigh of the non-dominant leg for 14 consecutive days (one-week overnight shifts and another week of non-overnight shifts). After the baseline monitoring was complete, a virtual interview was conducted with each participant to gather information about the current exercise habits and perceived exercise barriers. Based on the feedback from the interview, a three-week tailored exercise program was developed, and videoclips demonstrating the exercises were prerecorded. Participants were encouraged to incorporate the exercise program at least two days a week during the three-week intervention period. During the second and third weeks of the intervention period, participants were again asked to wear the inclinometry device. Descriptive statistics and paired samples t-tests were employed to examine the changes in various bouts of sitting from baseline to during intervention. Results: One participant withdrew from the study due to injury; therefore, 12 participants were included in the analyses. Paired samples t tests revealed no significant differences in varying bouts of sitting behavior between overnight and non-overnight shifts weeks as well as between baseline and during intervention (p .05). Conclusion: The findings of the study suggest that longer intervention period may be needed to change prolonged sitting bouts (greater than 2 consecutive hours of sitting) from baseline to intervention among family medicine residents. Understanding the varying bouts of sitting behaviors will help to provide participants with specific exercise intervention program that is tailored to reduce the bouts or prolonged sitting, either in an occupational setting or during leisure-time.

Balingit, Arianna

Institution: *MN - St. Catherine University*

Discipline: Kinesiology/Physical & Occupational Therapy

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Shavonnye Rath *Arianna Balingit* *Joshua Guggenheimer,* *Melanie Homan* *Jennifer Hutson* *Marcie Myers,* *Ginny Green*

Abstract Name: **The Impact of Far-Infrared Technology on Quality of Life in Older Adults**

Identifying various methods of pain amelioration to meet the unique demands of older adults (OA) may be crucial to increasing the quality of life (QOL) of this population. The purpose of this randomized, single-blinded study was to examine the effects of far-infrared heat (FIR) on pain management and QOL in OA. FIR utilizes a long light wavelength that simulates dry sauna-like conditions. Examining the relationship between FIR and pain is important due to the increased prevalence of chronic pain associated with aging and the corresponding impact it has on QOL and physical performance. Nine OA completed the study, eight of whom were women. Participants were randomly assigned to either a convective heat group (CON) or a convective and far-infrared heat (FIR) group, with convective heat set to 60℃/(140℉). Participants received six, 30-minute heat sessions over the course of three weeks. Pre- and post-assessments included physical measures such as range of motion, gait speed, timed up-and-go, and hand grip strength. Standardized questionnaires were used to determine pain severity and its interference with daily life, and the impact pain had on overall QOL, using a five-point scale. T-tests were used to compare the groups' pre- and post-assessment measures. Results indicated that pain severity was significantly reduced (from 3.31 to 2.5, 0.05) in the FIR group from pre-to-post, and that pain interference was significantly reduced (from 1.26 to 0.43, 0.05) in the CON group from pre-to-post testing. No other significant differences were found. Findings suggest that heat therapy was successful in reducing pain over time, but that FIR heat specifically, was not superior to that of convective heat alone. Our results couldn't discriminate between the independent effects of FIR and convective heat benefits. Further research is required to properly identify the relationship between QOL and the use of FIR.

Balk, Gabriel

Institution: *MI - Hope College*

Discipline: Physics/Astronomy

Author/Contributors:
Gabriel Balk

Abstract Name: **?-decay strength function of 54,52 Co and 55,53 Ni**

P process is believed to be responsible for the formation of heavy proton-rich nuclei in the universe. Because p nuclei are short-lived, the specific properties of their reaction and decay paths are difficult to measure. This work deals with the decays of four nuclei, 52,54 Co and 53,55 Ni. β+ decays for each isotope were recorded with the Summing NaI(Tl) detector at the National Superconducting Cyclotron Laboratory. A preliminary β-decay Intensity Function was derived with Total Absorption Spectroscopy. Total energy spectra, individual γ energy spectra, and multiplicity spectra for decays to levels in the child nucleus were modeled with GEANT4 based on information from the National Nuclear Data Center. The measured spectra, when fit with the simulated spectra, give the probability that a particular child level is populated during decay. Refined results, when compared to theory, will provide insight into the formation of p-nuclei elements.

Balke, Kat

Institution: ***KS - University of Kansas***

Discipline: English/Linguistics

Author/Contributors:
Katherine Balke

Abstract Name: Artifice in Arden: An Ecofeminist Study of Shakespeare's As You Like It

In this project, I will examine Shakespeare's As You Like It through an ecofeminist lens. Despite decades of scholarship on questions of gender and ecology in the play, scholars have failed to combine those two concerns into a single line of inquiry. Ecofeminist theory provides precisely this combined method by illuminating at once the exploitation of gender and the objectification of the natural world. Famously, the main character Rosalind is exiled from the court into the Forest of Arden, where her father has also been exiled by his usurping brother. Rosalind disguises herself as a young man named Ganymede and eventually encounters her "crush" Orlando, who is also exiled in the forest, and a melancholy man named Jacques. Only in the play's final scene does Rosalind remove her male disguise, and most of the cast makes a triumphant return to the court, leaving the forest behind. The title of the play itself does not lend to a straightforward interpretation, for Shakespeare implicitly encourages audiences to derive meaning through whichever interpretations they deem best: as you like it. My project seeks to understand how, in Shakespeare's most famous play about gender and nature, the two mutually reinforce and depend on each other.

Ball, Antonio

Institution: ***NC - Fayetteville State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Antonio Ball *Garrett Davis* *Ryan De Jesus*
Taryn Rozier *Adriel Alvarez-Collazo* *Daniel Bigler*
Ashley Sutherland

Abstract Name: Vision Guided Drone Flight

Drones are increasingly being used for reconnaissance, tracking, and inspection of locations that are difficult to access. Our team's research is to create increased autonomy for drone flight in physically confined environments. Our team is currently using the Tello EDU drones which can be programmed using the Python programming language. It, allows us to utilize OpenCV in conjunction with the Tello drone's built-in camera. The OpenCV software library is an Open-Source Computer Vision software. Computer Vision (CV) is the area within Artificial Intelligence (AI) that builds algorithms for computing machines to be able to make autonomous decisions based on visual data. OpenCV has built-in functions for a wide range of visual intelligence tasks including object detection. We're making use of April Tags which allows us to visually tag locations in physical space. Current work is focused on developing software for the drone which will enable it to fly through a gate to enter a confined space without collisions. In our research so far we have found that using the AprilTags to identify the border of the gate opening is an effective approach for guiding the flight path of the drone so it can enter the gate collision free. We, have also found that it is possible to incorporate YOLO, which is a CV algorithm for object detection for being able to identify objects within the field of vision of the flying drone's camera. Potential future uses for vision guided drones is the ability to navigate through environments and around obstacles to find people or objects of interest. The Tello drone's ability to fly as a swarm allows it to communicate with other drones, run tasks in parallel, to speed up task completion. Future research efforts will be directed towards swarming and task parallelization.

Ball, Holly

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Miranda Ricci,
Courtney Siegel,
Max Hall,
Holly Ball,
Tiaja Mckay

Abstract Name: **'Childish Platform' or Universal Medium: Making sense of Gen Z's SnapChat Attitudes and Usage**

In 2022, 44.5% of young people between the ages of 8 and 23 are Snapchat users. Snapchat usage for this generation is higher than all other platforms according to Statistica.While the majority of Gen Z uses Snapchat daily, there is a lack of extant research concerning how Gen Z uses and is affected by their Snapchat usage. Most research into social media use focuses on Facebook and Instagram given they have been the most used platforms until present times (Auxier; Anderson, 2021). As digital natives, Gen Z is used to building and maintaining relationships online. To better understand how Gen Z uses the Snapchat app to build and maintain relationships, this study sought to answer the question, " Why do people use Snapchat." To answer this question, we conducted a series of semi-structured interviews with 14 members of Generation Z. We utilized thematic analysis techniques (Nowell, Norris, White; Moules, 2017)to analyze the interview transcripts. The findings indicate that individuals continue to use Snapchat because it has been gamified (e.g., snap streaks, snap scores, story views, and emojis to indicate friendship closeness). That gamification has worked in conjunction with a fear of missing out to keep users interacting daily. Additionally, the analysis revealed that Snapchat users express a desire to move on from the app as they age, but continue to use it daily as it's the easiest way to maintain connections.

Ballard, Aidan

Institution: *VA - Virginia Commonwealth University*

Discipline: Sociology

Author/Contributors:
Aidan Ballard

Abstract Name: **Single Mothers in Sitcom History, 1950-2010: Reflections of a Changing America on the Small Screen**

Since the popularization and standardization of episodic television formats, the sitcom genre has been a staple for American audiences, and within it the nuances of family life are frequently a central focus. By providing comedic exaggerations to relatable characters and circumstances, sitcom programs are unique points of access and comfort within which many viewers see their own lives and concerns reflected. My research attempts to determine whether depictions of single-mother households from episodic American sitcom television historically underwent noticeably different treatment by writers or audiences than other household dynamics did, and what may have contributed to these differencesif so. The foundations of this researchlie in an exploration of multiple popular American sitcom programs and their content across those decades, as well as previous research conducted regarding relevant events in television and feminist history from America's past. Through an examination of tropes and common themes in popular single-parent American sitcoms from 1950 to 2010, this analysis discusseshow changes in the common model for these shows over time– shifting focus from single fathers in unique scenarios, to realistic single working mothers– appear to have correlated significantly with the rise of feminist social movements, as well as actual shifts in household demographics, impacting their audiences over this period. Additional research on this topic could provide crucial insight regarding the relationship between sociology and mass media– specifically, how negative societal attitudes regarding women and single parents may have been reinforced by situational comedies in American history.

Ballard, Hope

Institution: ***OK - Southern Nazarene University***

Discipline: Public Health

Author/Contributors:
Hope Ballard,
Caio Franca

Abstract Name: Intersectionality Between The Black Community and COVID-19 Testing

There is a long history of exploitation of minoritized communities, specifically the Black community, at the hands of the US Healthcare system which has led to medical mistrust in the Black community. COVID-19 has significantly highlighted these disparities between racial and ethnic groups. Black communities are especially susceptible to diseases which affect the heart, lungs, kidneys, and gastrointestinal tract, which are the organs which harbor the angiotensin converting enzyme 2 (ACE-2) receptor. This receptor is attacked by the COVID-19 virus making individuals who already have underlying conditions more likely to develop serious health consequences. The purpose of this study was to investigate the differences between different racial groups and their participation in a free COVID-19 testing site in a suburb of Oklahoma City. It was hypothesized that there would be a significant difference in the number of Black Americans who would choose to be tested because of distrust of healthcare systems. Demographic data were collected from the testing site, deindentified, and then aggregated by race and ethnicity to determine the racial makeup of patients within the sample. The hypothesis was not supported as the percentage of Black Americans who accessed the testing site (5.82) was larger than the percentage of Black Americans living in the surrounding community (4.5). The limitations of this study were that data were only collected at one site and the site did not specifically target Black Americans as participants. In conclusion, despite other research findings supporting Black American mistrust, this study found that Black Americans were willing to be tested for COVID-19. This opens the door for other studies to examine Black American attitudes toward healthcare as it relates to social well-being.

Ballard, Taniya

Institution: ***NC - Winston-Salem State University***

Discipline: Physics/Astronomy

Author/Contributors:
Taniya Ballard,
Zaria Dillahunt,
Krislynn Hawthorne,
Myron Brown,
Tennille Presley

Abstract Name: The Impact of Genre on Electrical Responses during In vivo and In vitro experiments.

Music has been proven to elicit autonomic responses in human cells such as cell viability, cell motility, and skin conductivity. While numerous music-based studies are generalized and address the emotional response a person may exhibit, there is limited research addressing the effect of varying musical genres on the electrical activity of the human body. Our study aims to unveil the influential impact that musical selections may have on skin conductivity, cell viability, and cell growth in bovine brain artery endothelial cells (BBAECs). We hypothesize that musical genre and tempo will impact the body's electrical response, as well as cell viability and growth in BBAECs. To test our hypothesis, we developed a musical playlist of three songs within three distinct genres: classical, gospel and rock. Each song was played for 120 seconds, alternating with a 120-second quiet period at the beginning and end. For in vivo experiments, electrical activity was analyzed via skin conductivity using a Q-S222 galvanic skin response (GSR) sensor. For in vitro experiments cell viability and cell proliferation were determined based upon each genre. Our GSR results revealed that Rock was 2.43 ± 0.17 μS, Classical was 2.23 ± 0.18 μS and Gospel was 3.08 ± 0.51 μS. While one of the Gospel songs had the largest tempo, it did not demonstrate the greatest GSR. Regarding the BBAECs, the cell viability and growth was more significant in the presence of music as a whole. Understanding this information, we can elucidate how specific genres elicit electrical responses such as brain activity and cerebral brain flow.

Ballesteros, Melissa

Institution: *IL - Trinity Christian College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Melissa Ballesteros *Jenna Goss* *Kara Van Dyke*

Abstract Name: **Religious Counselors and Cultural Competence: When Beliefs Collide**

Individuals with a fundamentalist religious orientation respond defensively to challenges against their religious beliefs(Abeyta; Blake, 2020). Individuals who are intrinsically religiously oriented are internally focused and help others based on their own values, whereas quest-oriented religious individuals are altruistic and act based on the values of those they help, (Batson 1976, Batson et al., 1989). Researchers aim to understand the relationship between orientations of religiosity and counselors' perceived multicultural competence with clients. In this exploratory mixed-methods study, 35 counseling students and alumni from a small midwestern religiously affiliated college completed a survey with open-ended questions and scales. The short answer questions ask about faith, experiences in clinical training, and counseling practice. Participants completed the 12 Item Quest Scale (Batson; Schoenrade, 1991), Revised Religious Orientation Scale (Gorsuch; McPherson, 1989), Multidimensional Cultural Humility Scale (Gonzalez et al., 2021), Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (Bidell, 2017), and Fundamentalism Scale (McFarland, 1989). Researchers discovered participants who score themselves as fundamentally oriented and see religion intrinsically, score highly in self-awareness. Participants who score highly in quest orientation score highly in competence to work with LGBTQ+ clients. The results were: significant positive correlations between intrinsic and fundamentalist (N=29, r= 0.646, 0.000), fundamentalist and self-awareness (N=29, r= 0.416, 0.25), quest and LGBT DOCSL (N=35, r= 0.384, 0.04), as well as significant negative correlations between fundamentalist and quest orientations (N=29, r= -0.595, 0.001). Qualitative responses indicated that counselors who wrestle with their religious beliefs are more willing to engage clients' values. Conversely, religiously certain counselors displayed more internal conflict and less confidence when helping clients with differing beliefs. These initial results support Abeyta and Blake's (2020) findings that those who are more fundamentalist and intrinsically oriented help others according to personal values.

Ballou, Ryan

Institution: *WI - University of Wisconsin-Superior*

Discipline: Economics

Author/Contributors:
Ryan Ballou

Abstract Name: **The Impact of COVID-19 on the United States Household Activities**

This study examines (1) How household activities were affected by COVID-19, (2) How COVID-19 affected activities in a U.S. home by gender, and (3) How the U.S. home improvement was affected by the COVID-19 pandemic restrictions. Using data from publicly available secondary sources such as the U.S. Bureau of Labor Statistics and the U.S. Census Bureau; we find that lockdowns in response to the COVID-19 pandemic significantly impacted household activities and the home improvement market. Household activities increased by 12 percent in 2020, while work-related activities declined. Besides sleeping, the most common household activity was food preparation and cleanup which increased by 3 percent in 2020. Some of these activities were more common in specific genders. Men spent 54 percent more time on lawn and garden care, while women spent 11 percent more time on housework and 12 percent more time taking care of children within the household. When looking at married fathers and mothers, we find that married mothers had a 9 percent decrease in work-related activities, while married fathers had a 27 percent increase. Married mothers had a 40 percent increase in leisure and sports activity when compared to pre-pandemic levels, while fathers only had an 8 percent increase. However, changes in these household activities were temporary and reversed in 2021 to almost pre-pandemic levels. Do-it-yourself (DIY) projects surged in popularity from the lockdowns, and average retail sales of building materials and garden equipment increased by 12 percent in 2020. The sudden demand for these materials combined with a decreased supply caused by a global supply chain crisis, led to producer softwood lumber prices to increase by 121 percent in 2021.

Baltuff, Rachel

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Rose,
Brennan Vanlandingham,
Jillian West,
Rachel Baltuff,
Alex Kruschke,
Madison Lloyd

Abstract Name: Role of Motivation on Academic Success

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation in education is and how it impacts the academic success of college students. Factors that will be studied include intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation students vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions adressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Banda, Antonio

Institution: ***WI - Marquette University***

Discipline: Physics/Astronomy

Author/Contributors:
Karen Andeen,
Larissa Paul,
Antonio Banda

Abstract Name: IceAct Prototypes Toward an Imaging Air Cherenkov Telescope Array at the South Pole

IceAct is a proposed array of small and cost effective imaging air Cherenkov telescopes situated at the IceCube Neutrino Observatory at the South Pole. Since January 2019, two prototype IceAct telescopes have been taking data during the South Pole winters. Four years of data-taking experience has taught us much about how these telescopes perform in the harsh South Pole environment. Here we will detail the lessons-learned and ongoing research and development efforts to update these prototypes for future Polar seasons.

Banta, Joelle

Institution: *WI - Carthage College*

Discipline: Economics

Author/Contributors:
Joelle Banta

Abstract Name: **China's 1994 Tax Reform- Fiscal Re-centralization in a Post-Planned Economy**

The 1994 tax-sharing system, or fenshuizhi, helped propel China into a modern era of fiscal management. New policies that opened China's economy to the world allowed markets to thrive, but during a time of rapid growth, the central government was financially floundering. Previous administrations funded government budgets with highly centralized profit-turnover systems and inconsistent fiscal contract arrangements throughout the country, but the decentralization of China's economy left the central government unable to tap into the new economic growth. China's central government had a massive deficit and severe corruption. To avoid a financial crisis, a Tax Sharing Reform was introduced in 1994, providing new revenue sources and re-centralizing fiscal management.The 1994 reform separated local and central taxes, so each level of government could achieve better cooperation within its respective sector. This significantly reduced fraud and bias of income distribution that previously suffocated the central government. Furthermore, it provided both provinces and the central government with adequate revenue to fund essential expenditures. The tax-sharing reform resulted in a better-balanced distribution of government resources so the government and the people could benefit from the flourishing economy.

Barber, Joseph

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Joseph Barber,
Jennifer Muehlenkamp <

Abstract Name: **Discriminant Analysis of NSSI Characteristics and Risk Factors for Suicide**

Non suicidal Self Injury (NSSI; intentional injury to body tissue without suicide intent) is prevalent among college students. Many studies have supported a strong association between NSSI and suicidal behavior, above other common risk factors such as hopelessness and impulsivity. Current research is working to identify potential typologies of suicide risk to better inform prevention (Dhingra, et al 2016; Martin, et al 2020), but most focus only on cognitive risk factors and utilized self-reports. To best identify typologies, NSSI and behavioral measures of risk factors should be included. The purpose of the present study is to examine which combination of NSSI characteristics and known suicide risk factors best differentiates severity levels of suicidal behavior. The sample for the present study came from an archival dataset of a longitudinal study of NSSI and suicide risk in 420 college students with a history of self-injury (Mean age = 18.92, SD = 1.38yrs; 83.9% Female; 91.8% White). Assessments of attentional bias to suicide, NSSI characteristics, suicide ideation, suicide attempts, fearlessness about death, depression, hopelessness, and impulsivity were collected using online self-report and reaction time measures. Past year frequency of NSSI was 9.19 (SD = 16.40 acts), and 60.6% reported having made a suicide plan or attempted suicide (36.2%) in their lifetime. We will run a Discriminant Analysis to identify which combination of risk factors best differentiates those with severe to less severe risk for suicide ideation and attempts. We expect to find several clinically significant severity subgroups based on the risk factors analyzed (e.g. those with high NSSI frequency, hopelessness, and attentional bias to suicide will be in the attempt group vs. Ideation group). Results from the current study can be used to identify the most salient risk factors for clinical risk assessments, and to guide prevention/interventions.

Bardai, Sahil

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sahil Bardai

Abstract Name: **Understanding the Contributions of Hormonal Contraceptives and Cortisol Levels to Fear Learning in Women**

Women who use hormonal contraceptives show heightened startle reactivity to a threatening stimulus. Previous results from our lab showed a significant increase in fear-potentiated startle (FPS) in women who were on hormonal contraceptives compared to women who were naturally cycling. These results stayed consistent throughout three acquisition trials. Others have shown that the use of OCPs (oral contraceptive pills) is related to the dysregulation of the HPA-axis and elevated circulating cortisol levels. Cortisol dysregulation is strongly associated with fear and anxiety, and individuals who have experienced stress and trauma often show dysregulation of the HPA-axis including cortisol abnormalities. The aim of the current study is to use the fear-potentiated startle (FPS) paradigm to examine the relationship among women's hormonal contraceptive use, cortisol levels, and fear learning. The FPS paradigm is well established as a noninvasive tool to measure amygdala activity and characterize biological correlates of fear learning. FPS measures startle amplitude (μV) in the presence of a reinforced conditioned stimulus (CS+) that is paired with an unconditioned stimulus (US), as well as during exposure to a non-reinforced conditioned stimulus (CS-) that is not paired with a US. In the current study, participants were divided by hormonal contraceptive use including women who were naturally cycling and women who were currently using hormonal contraceptives. Participants underwent three acquisition trials to measure their fear learning. Saliva was collected at baseline and after acquisition. Saliva samples were analyzed using ELISAs to measure cortisol levels at each time point. Data will be analyzed to determine the influence of cortisol on the established relationship between fear learning and contraceptive use. Results from this research have the potential to help identify the biological bases of pathological fear learning processes that contribute to an elevated risk of anxiety disorders in women.

Barkdull, Anna Wilkinson

Institution: *UT - Utah Valley University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Anna Wilkinson Barkdull *Emily Limb*

Abstract Name: **Visualizing Utah Lake Nutrient Concentration using GIS-Remote Sensing Analyses**

Utah Lake, one of the largest freshwater lakes west of the Mississippi River, has been experiencing harmful algal blooms (HABs) in recent years. These blooms produce a cyanotoxin that poses a health risk to the ecosystems and people living near the lake. HABs have been linked to excessive nutrient loading in lakes and reservoirs. There are various nutrient sources in Utah Lake, including nutrients from tributaries, surface runoff, effluents, stormwater, groundwater, and atmospheric deposition. The objective of this study is to use nutrient measurements and remote sensing imagery to examine any potential correlations between nutrient concentration and HABs distribution in the lake and to visualize how the HABs vary spatiotemporally. Measurements of ammonia, nitrate, nitrite, and phosphate were conducted over the course of a 5-week period in the summer of 2022 as well as 1 week of on-lake sampling. The measurements were used to interpolate the nutrient concentration in the entire lake. The interpolation maps were then compared against a band ratio from Landsat satellite imagery which is a good indicator of levels of chlorophyll a, a pigment-protein within algal blooms. These interpolation maps were also compared against an interpolation map made of phycocyanin concentrations, another pigment-protein within algal blooms, measured at each sampling site. The preliminary results have shown the highest correlation between phosphate and nitrite concentrations to the algal blooms in Utah Lake. The highest concentration measured was 2.96 mg/L of phosphate at the Hobble Creek downstream sampling site, the next two highest at 2.29 and 2.17 mg/L were also phosphate measurements taken at downstream sites. The nutrient with the highest average concentration was nitrate with an average of 0.46 mg/L. Observations from this study could be beneficial for decision-makers to prioritize the areas for HABs management and establish in-lake nutrient standards to minimize HABs occurrence and frequency.

Barnard, RaiLynn

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Dejntxhee Vang,
Brynn Richard,
RaiLynn Barnard

Abstract Name: Mental Health In Athletes

Athletes who are in higher education, collegiate athletes, are individuals who can struggle with addressing concerns related to their own mental health. Athletes can develop these ailments due to their environment: self-esteem stigmatization, sport-related injuries like concussions, influences from coaches, their view on social status, and even overtraining. This research examines the effectiveness in outreach programs and the outcomes from having a mental illness as well as correlational factor of stress. In an attempt to analyze athletes and their stressors, a survey was directed to those who participated in sports. The search for a correlation between coaches and causes of stress, questions were asked in a survey related to athlete stress and relationship with the coaching staff. The participants responded with 'probably yes' and 'probably not'. This showed that athletes were prone to facing stress at an average and above-average level. Stressors and rehabilitation in athletes are reported to have been extremely difficult. Results reported back that athletes definitely struggle to reach out to others. The group also searched for solution rates regarding outreach encouragement with peers and coaches. The report shows a vast majority responded that they weren't encouraged by others. The results showed that mental illness is potentially still a hidden topic across the sports world. This study aims to help support the research that collegiate athletes do experience mental ailments and that these ailments are caused by many factors: the responsibilities of training and overcoming challenges, the consequences of injuries, and advice from coaches or peers.

Barner, Kai

Institution: ***VA - George Mason University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Franchesca Mireku *Daniel Herrera* *Ha Dao*
Abigail Kokkinakis *Alexandra Diaz Merida* *Kai Barner*
Amanda Webber *Mariaelena Pierobon* *Travis Gallo,*
Taylor Anderson

Abstract Name: The Role of the Urban Built Environment in Breast Cancer Mortality Health Disparities

Breast cancer is the second-leading cause of cancer-related death among women in the United States, but mortality rates vary across the population. Previous studies use individual and county level data to examine the association between breast cancer mortality and various socio-demographic and environmental variables. However, global regression models assume spatial stationarity meaning that associations between explanatory variables and breast cancer mortality are the same across geographic space and scales. Therefore, the objective of the study is to use county-level data that describes the social and built environment across the contiguous United States to explain breast cancer mortality rates, as reported in the Surveillance, Epidemiology, and End Results (SEER) database, using a multi-scale geographically weighted regression model (MGWR) that accounts for spatial heterogeneity. We compare our MGWR model with a baseline global linear regression model (OLS). The MGWR outperformed the global linear regression model with an adjusted R2 of 0.91, explaining about 43% more variance than the OLS. The R2 for each county is high in the western part of the US and decreases towards the east. In comparison to global linear regression, MGWR had the same overall trends in terms of relationships between explanatory variables and mortality. For example, as mammogram screenings, health food index, and primary healthcare physician ratio increased, breast cancer mortality decreased. However, MGWR reveals spatial heterogeneity associated with the magnitude and direction of each relationship across counties. Such an approach allows for greater consideration of where certain variables are most influential in breast cancer mortality allowing for location-specific interventions.

Barner-Moon, Jaylesiyah

Institution: ***OH - University of Findlay***

Discipline: English/Linguistics

Author/Contributors:
Jaylesiyah Barner-Moon

Abstract Name: Social Power Impacts The Decision of the Verdict; The Bobby Dunbar Case

The disappearance of Bobby Dunbar is an unsolved historical mystery. Bobby Dunbar was a child who went missing in August 1912. His parents, Lessie and Percy, searched for months and found a similar-looking child named Bruce Anderson. Bruce Anderson had moles and scars identical to Bobby Dunbar. Lessie and Percy Dunbar sued in court that Bruce Anderson was their child—that Bruce Anderson was Bobby Dunbar. The Dunbars were awarded custody of Bruce Anderson, who was removed from the home of his unmarried mother. This case provides evidence that social power and worth will sway a verdict toward the most powerful. This paper examines the literature on social justice in adoptionas well as on the relationship between poverty, child welfare, and adoption. Applying this research, this paper analysis newspaper accounts of the court proceeding to argue how the newspapers' reports influenced the outcome of the case by ruling in favor of the Dunbars. Newspaper articles portrayed the Dunbars as fit parents due to their money and social class, while portraying Julia Anderson as unfit due to the nature of her being in poverty. A close reading of these reports shows that the social class that you are put or born into becomes a part of your identity. This “identity” is how the world views you.

Barnes, Phoebe

Institution: ***OK - University of Central Oklahoma***

Discipline: Nursing/Health Science

Author/Contributors:
Phoebe Barnes

Abstract Name: Transgender Patient Outcomes and Education

Transgender (trans) patient outcomes are some of the worst outcomes out of all patient populations. Current documentation shows that trans outcomes are especially low due a multitude of factors including but not limited to: transphobia, refusal of care, inadequate care, discrimination, and homelessness. While there are many studies covering trans mental and physical health outcomes and risks, there is little to no information regarding how trans patients can improve their health outcomes themselves. This proposal aims to improve trans patient outcomes by empowering them through means of education. This will be done by first evaluating trans participants baseline knowledge regarding trans health risks and care via a pre-presentation survey. The survey will also evaluate participants' confidence levels and concerns regarding seeking healthcare. Afterwards, participants will be provided an educational presentation containing information from this literature review in addition to information on how they can advocate for themselves and better navigate the healthcare system. Lastly, participants in this study will fill out a post-presentation survey which will evaluate how confident participants feel regarding navigating the healthcare system and their ability to advocate for themselves. Participants will also be provided an educational pamphlet that summarizes the presentation's information. Because this proposal primarily focuses on improving trans patient outcomes by means of education and self-advocacy, this proposal study will use a practice-based approach inspired by Petry et al. (2020) article as it provides information on how individuals can best advocate for themselves in everyday life.Keywords: Transgender outcomes, transgender, education, empowerment, self-advocasy, health outcomes

Barnes, Susan

Institution: *OK - University of Central Oklahoma*

Discipline: FAN Abstract

Author/Contributors:
Susan Barnes,
Leann Laubach

Abstract Name: **Engaging Undergraduate Students with Animal Assisted Therapy Activities, Outreach, and Research**

Animal Assisted Therapy (AAT) is a recent phenomenon in the research literature with the first reports appearing just over 20 years ago. The current and popular trend of embedding certified animals into the higher education system is based on the overwhelming popularity of the practice and on the positive outcomes of research endeavors related to the activity.
This presentation will be a discussion of how the AAT program at the University of Central Oklahoma Department of Nursing has been shown to be an effective strategy to improve the mental outlook and modify stress of students and faculty. Not only does AAT provide modify stress, it provides opportunities for students to engage in research, conduct independent research, and assist in the care and management of the dogs. This is hands-on approach is a very effective approach to teaching research methodologies, and helps students learn the importance of complementary and alternative health interventions.
Topics to be addressed in this talk include barriers to animals on campus as well as the expense associated with such programs. Although the dogs initially arrived on campus Fall of 2019, the pandemic prohibited the practice of AAT for the next 18 months. Once restrictions were lifted, the program began to develop quickly, with undergraduate research students given an option to do AAT research. Acquisition of grant funding to add a dog to the team led to a group of students who participated in training and socialization of the new dog. This spring will be the second-year students will be presenting evidence-based practice and/or research findings that involves the AAT Dogs.
Keywords: Animal Assisted Therapy, Undergraduate Research, Nursing Students, Stress Modification, Complimentary Health Approach

Baroli, Kathryn

Institution: *OK - University of Central Oklahoma*

Discipline: Economics

Author/Contributors:
Kathryn Baroli

Abstract Name: **How Historical Nuclear Energy Policy Differences Between France and Germany Connect with the Current Energy Crisis**

Nuclear energy will not be the optimal long-term sustainable alternative to coal or natural gas as an electricity source to reduce carbon-dioxide emissions unless it is tied with the improvement of other renewable energy sources. In this research, I assess the historical divergent nuclear energy policies found in France and Germany as a case study. Though both share similar resource and geographic positions, after World War II the European Steel and Coal Community was proposed to integrate Germany into the rest of Western Europe setting the two countries on very different paths regarding how they would ultimately choose to pursue nuclear energy policy. Moving to present day, I exploit the continued differences in nuclear policy due to the 2008 Financial crisis and the current Russian-Ukraine War to explain that the two countries' not integrating their nuclear policies benefits not only themselves but also the European Union, contrary to popular opinion. Current nuclear energy research exalts the electricity generation abilities of nuclear power plants and their environmental benefits for good reason, however, the existing and possible risks caused by nuclear power plants is extreme enough for a re-analysis to occur. These findings suggest that nuclear energy policies should remain a country-by-country decision and not focus on integration, but on the improvement, advancement, and accessibility of fully renewable energy sources such as wind, solar, or hydropower as well as maintaining nuclear resources.

Barrera, Emily

Institution: *IN - Indiana University South Bend*

Discipline: Chemistry/Materials Science

Author/Contributors:
Emily Barrera,
Grace Muna

Abstract Name: **Electroanalytical Performance of Antimony Modified Glassy Carbon Electrode in Detecting Lead and Cadmium**

Metals such as lead and cadmium are some of the most dangerous pollutants that can be found in the environment. Due to past human activity, lead had leaked into the environment from gasoline and lead-based paints. Lead poisoning can cause many adverse health effects in humans especially in the neurological development of children. The Environmental Protection Agency (EPA) has a set limit as to how much lead and cadmium are permitted in water sources, which are 15 and 5 ppb for lead and cadmium, respectively. The work that will be presented utilizes a glassy carbon electrode (GCE) modified by electrochemically depositing antimony (Sb) using chronoamperometry technique. In detecting lead and cadmium, the analytical performance of the modified electrode was evaluated using differential pulse anodic stripping voltammetry. The analytical performance of the modified electrode was evaluated in terms of linear dynamic range, sensitivity, response stability, and limit of detection. The developed method using the Sb modified GCE (Sb-GCE) exhibited good analytical performance, for example, the linear dynamic range was 0.1 – 100 ppb and 1 – 100 ppb for lead and cadmium, respectively. The limits of detection for lead and cadmium were 0.1 and 1 ppb, respectively, way below the EPA recommended levels. In future research, experiments will include ways to improve the response stability of the Sb-GCE surface which for lead is 7.3 % and that for cadmium is 5.4%. The developed method will be applied for real sample analysis of lead and cadmium in soil and water samples obtained locally.

Barrett, Avery

Institution: *CA - University of San Diego*

Discipline: English/Linguistics

Author/Contributors:
Avery Barrett

Abstract Name: **The Narration of a Nation: Historiography, Literature, and the American Dream**

The American Dream is a narrative that acts as an intrinsic element to the development of the U.S. While it is an ever-present national ethos, little is understood about the history and background of the Dream, and why it was created. This project will examine the role of James Truslow Adams' idea of the "one eye shut" version of history -- ignoring the stories of the many in order to uphold the illusion of hard work as the only requirement for social and economic uplift-- and its role in the development of the American Dream. I investigate the impact of these narratives of the nation in the lives of those ignored, as these narratives emerge in the select texts of contemporary authors. This literature reveals the effects of the American Dream, and establishes that this national narrative is one that contributes to systems and cycles of oppression and exploitation. This project will not only reveal greater information about this national ethos and illuminate its troubled past, but also create a more comprehensive, "both-eyes-open" version of American history, literature, and the stories we live by.

Barretta, Olivia

Institution: *FL - University of West Florida*

Discipline: Education

Author/Contributors:
Olivia Barretta,
Anna Belle Barberree

Abstract Name: **Developing a Lesson Plan for Analyzing Sand Dunes Utilizing the Pythagorean Theorem and Estimating Vegetation Percentages**

High Needs School Districts (HNSDs) often have higher populations of low-income students who might have limited exposure or access to STEM compared to their non-HNSD counterparts. As a result, teachers in HNSDs need to make STEM more accessible to and equitable for their students. Citizen science has been found to be one such method to make science more accessible and inclusive. Thus, the purpose of this project was to develop a citizen science lesson plan that would make scientific content more relevant and accessible to high school students for two pre-service STEM teachers. This project was an interdisciplinary and collaborative effort between an Environmental Science Teaching major and a Mathematics Teaching major to develop a citizen science lesson plan on coastal dune topography and beach vegetation. The lesson plan integrated topics from Mathematics such as the Pythagorean Theorem, and topics from Environmental science such as coastal morphology and coastal marine botany. Prior to developing the lesson plan, the STEM teaching majors engaged in fieldwork on sand dunes in Pensacola Beach in Florida to help them frame the lesson and identify what specific activities students taking this lesson would be engaged in. The STEM teaching majors were able to develop a lesson plan in which students would use the Pythagorean theorem to plot the topography of sand dunes and would correlate the topography with their findings of different coastal vegetative species along the survey area of the dune based on knowledge of these species provided to them prior to the field experience. The primary objective of this project was to make STEM more inclusive by developing learners' understanding of coastal environments and the vital roles they play in our local communities using an interdisciplinary experiential approach.

Barron, Olivia

Institution: *MI - Wayne State University*

Discipline: History

Author/Contributors:
Olivia Barron

Abstract Name: **Spokes On a Wheel: Activities of the UAW in a Time of Crisis**

During the late 1970s and early 1980s, the American automotive industry faced unprecedented competition from Japanese automotive companies. Companies such as Toyota and Nissan were importing automobiles into the country at ever-increasing numbers, while the Big Three car companies—Ford, GM, and Chrysler—tried in vain to bounce back from falling profits. Coupled with a larger economic context of inflation and increased oil prices, Japanese companies spent this period effectively dethroning the Big Three Detroit car companies that had enjoyed decades of superiority in the auto industry.While American car companies floundered, perhaps the biggest blow of the whole phenomenon was dealt to the American auto workers. Auto workers faced layoffsin increasing numbers, and as years passed with little employment opportunity in sight, they faced the serious threat of dried up unemployment benefits and eventual poverty. So, when corporate could not be called upon for aid, they turned instead to the labor union. The United Auto Workers union spent the entire periodin question, from about 1979to 1985, advocating for extendedaid for auto workers as well as for expanded support from the federal goverment. Two members of the UAW worth particular attention are Douglas A. Fraser and Donald Ephlin, President and Vice-President respectively of the UAW during this period. Both Fraser and Ephlin advocated for the support of auto workers during this period. From a cursory glance, however, it would seem as though Fraser and Ephlin were not on a united front—but they in fact were.Although Fraser and Ephlin pursued different, various tactics over this period, all of their efforts went towards the largergoal of supporting auto workers. This presentation will illuminate and analyze various endeavors undertaken by Fraser and Ephlin, looking at how they, though seemingly disparate,connect to each other and the UAW's larger goal.

Barrow, Michael

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Harry Jol *Philip Reeder* *Richard Freund*
Mikaela Martinez Dettinger *Isabel Radtke* *Tristan Wirkus*
Taylor Phillips *Delia Ihinger* *Joseph Beck,*
Bri Jol *Caroline Hayes*

Abstract Name: Subsurface Imaging of a Mass Grave: An Investigation within the Old Jewish Cemetery of Riga, Latvia

Over 6 million Jewish lives were lost due to the killing by Nazi authorities and their collaborators during World War II. More than 70,000 local and transported Jewish people from around Europe were executed in Latvia alone. The objective of the project is to locate the unmarked mass grave of 800 to 1000 Jewish prisoners. These prisoners were murdered by Einsatzgruppen members and Latvian collaborators in the streets of the Riga Ghetto, as they were on a forced death march to Rumbula, where they were to be executed on November 30, 1941. According to survivors' testimonies, the Old Jewish Cemetery is the place where Jewish prisoners that could not make it to Rumbula were killed. Based on electrical resistivity tomography (ERT) and ground penetrating radar (GPR) data collected earlier, anomalies were detected that could be interpreted as burial graves. Addition GPR data was collected to further solidify the interpretations. The GPR method sends electromagnetic pulses into the ground and records reflections off contrasts in the surface. A 10mx40m grid was laid down to examine the ground. A total of 160 lines 0.25m apart were collected with a Sensors and Sofware pulseEKKO Pro GPR system using an antennae frequency of 500 MHz with a step size of 0.02m triggered by an odometer wheel. The data was then process through pulseEKKO_Project 5 software. Collection of topography using the Topcon RL-H4C laser leveler and light detection and ranging (LiDAR) were used to examine the surface. The results of data collected by GPR indicates multiple subsurface disturbances in the location of the old wall, located in the corner of the park right next to Tejas and Virsaisu Streets, these subsurface disturbances are indicative of a mass grave. Further studies, such as aerial photography and additional GPR collections are suggested to determine an exact location.

Barsoum, Mya

Institution: ***FL - Florida Atlantic University***

Discipline: Sociology

Author/Contributors:
Mya Barsoum

Abstract Name: The Future for Assisted Suicide in the U.S

In the United States, 10 states have legalized physician assisted suicide for individuals diagnosed with a terminal illness. This prolongs constant debate between American's on whether physician assisted suicide should be a constitutional right in the United States or not which is a current and longtime controversy within the nation. The purpose of this study is to examine American's views on whether physician assisted suicide should be legal or illegal throughout the United States. I hypothesized that there is a difference in views regarding who is more accepting of physician assisted suicide as opposed to those who are against the process based on gender, age, and political party. To test this hypothesis, I conducted a 15-question survey and administered it using 'Survey Monkey' and 'Amazon MTurk'. My sample consists of 193 respondents in the United States over the age of 18. I found that there is a statistically significant difference in response regarding physician assisted suicide based on gender, party affiliation, and age. Specifically, I found that those who are 50 years old and over are more in favor of physician assisted suicide yet still believe it violates the ethical norms of the physician. I have also found that registered Democrats are more in favor of physician assisted suicide in comparison to registered Republicans, independents, or those affiliated with another political party. In conclusion, a vast majority of recipients support the idea of physician assisted suicide; therefore, policy makers should look to legalizing the process in more states throughout the country.

Bart, Alex

Institution: *PA - Lafayette College*

Discipline: Biology

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Alex Bart,
Khadijah Mitchell

Abstract Name: Comparing the Association Between miR-181c, a Novel Population-Specific OncomiR, and Aggressive Tumor Biology in African American and European American Kidney Cancer Patients

Background: Renal cell carcinoma (RCC) is the most common type of kidney cancer (85%), and has the lowest survival compared to all other urologic cancers. There are three distinct RCC subtypes: clear cell (75%), papillary (15-20%), and chromophobe (5%). African American (AA) RCC patients have worse advanced-stage survival than European Americans (EAs), possibly due to aggressive tumor biology. microRNAs (miRs) and miR isoforms (isomiRs) silence mRNAs by preventing translation, and drive different mRNA expression signatures associated with invasiveness and metastasis. It is unknown if these transcriptomic signatures vary by race in RCC patients. Hypothesis: Population-specific isomiRs are associated with racial differences in aggressive tumor biology.Study Design: miR-seq, isomiR-seq, mRNA-seq, and clinical data were downloaded for AA and EA RCC patients in the pan-RCC TCGA discovery cohort (n = 121 AAs, n = 708 EAs). The PGS miR Expression Workflow, R, and cBioPortal were used to determine differentially expressed (DE) miRs, isomiRs, and mRNAs by race (P <0.05). isomiR expression inclusion criteria were ≥3 reads per million (1: low specificity and high sensitivity; 5: high specificity and low sensitivity) and abundant in ≥50% of patients (n = 415 patients). Results: miR-181c was significantly DE in AAs and EAs across all RCC subtypes (ccRCC: P = 1.01e-7, pRCC: P = 0.032, chRCC: P = 0.045). A total of 4/14 miR-181c isomiRs had significantly higher expression in AAs compared with EAs. High miR-181c-3p|5't-13,3'a-14| expression in AAs was associated with lower CDH1 expression. Low CDH1 expression is linked to EMT and poor RCC survival across subtypes. Conclusion: miR-181c-3p|5't-13,3'a-14| may be a novel oncogenic isomiR and biomarker of aggressive tumor biology in AA RCC patients. Clinical targeting via isomiR sponges would increase CDH1 expression and potentially reduce racial disparities in survival. Future Directions: Replicate these findings in pan-RCC patients in the CHTN/Geisinger validation cohort.

Barta, Cheri

Institution: *WI - University of Wisconsin-Madison*

Discipline: FAN Abstract

Author/Contributors:
Catherine Chan *Jessica Schuld* *Scott Cooper*
Julie Dresen *Cheri Barta*

Abstract Name: The Wisconsin Council on Undergraduate Research: Working Together to Promote and Support Undergraduate Research, Scholarly and Creative Activities

Undergraduate research, scholarly, and creative activities (URSCA) have a long history in the University of Wisconsin System (UWS). Since 1999, various system campuses have hosted the UW System Symposium, an annual gathering modeled after the National Conference on Undergraduate Research. It brings together undergraduate researchers, their mentors, and program coordinators to showcase the accomplishments of and celebrate URSCA. With the support of a National Science Foundation grant awarded to the Council on Undergraduate Research to institutionalize undergraduate research at the system/consortium level, the Wisconsin Council on Undergraduate Research (WisCUR) was formally launched in 2013.The group initially consisted of URSCA program leaders and advocates from UWS institutions. Recently, its membership expanded to include private universities and technical colleges in Wisconsin. Its mission is to provide leadership to advance, enhance, and expand URSCA across the UWS and beyond in order to prepare graduates who can adapt and innovate for the challenges of the future. Since the inception of WisCUR, URSCA programs within the WisCUR network have made great strides. For example, three UWS schools (UW-Eau Claire, UW-La Crosse, and UW-Milwaukee) have won the Campus-Wide Award for Undergraduate Research Accomplishments (AURA). No other state system has received the honor of receiving multiple AURA awards. Partly due to its involvement with WisCUR, Concordia University developed an undergraduate research certificate program and Madison College created an undergraduate research program.Wisconsin higher education institutions have also faced a variety of challenges that require innovations and adaptations, and WisCUR has served as a resource and support in this area. In this presentation, we will share the organization and goals of WisCUR, typical activities (beyond UWS Symposium) we sponsor, and benefits of WisCUR to individual institutions and staff therein. We will provide suggestions on how to organize similar URSCA groups and invite attendees to share their experiences.

Bartels, Taylor

Institution: *IL - North Central College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Taylor Bartels

Abstract Name: **Liberty and Justice for All? Gender Differences in Emotional Reactions and Perceptions of Safety in Response to the Overturning of Roe v. Wade**

The recent, controversial overturning of Roe v. Wade has impacted the bodily autonomy and resources of American women. Previous studies identify negative emotional responses such as anxiety, fear, and anger in individuals impacted by laws that limit bodily autonomy, such as abortion restrictions and bans on gender-affirming care (Harris et al. 2014; Abreu et al. 2021). Though previous research has examined negative emotional responses to other laws restricting bodily autonomy, no research to date has investigated these responses in regard to the overturning of Roe v. Wade. Additionally, less is known about how gender influences individuals' emotional responses to this ruling or how laws restricting bodily autonomy impact college students. This study aims to compare perceived stress, anxiety, fear, anger, and feelings of safety between men and women in response to the overturning of Roe v. Wade. Participants will consist of 100-120 college students enrolled in psychology courses who will complete modified versions of questionnaires including the Perceived Stress Scale, Positive and Negative Affect Scale, Rosenberg Global Self-Esteem Scale, and a Likert-type measurement of safety perceptions after reading a description of the history of abortion rights and recent overturning of Roe v. Wade. The IRB has approved this study. Data collection is currently underway and will be completed by December 2022. T-tests will be used to examine differences between men and women. It is hypothesized that both men and women will express negative reactions, but women will express stronger negative reactions with the highest negative response to perceptions of safety. This research will increase understanding of college students' emotional responses to the overturning of Roe v. Wade and may be useful to college campuses as they reevaluate the quality and quantity of resources to support students affected by this ruling.

Bartley, Alex

Institution: *MN - Bemidji State University*

Discipline: Business

Author/Contributors:
Alexander Bartley

Abstract Name: **How Bemidji Area Businesses Attract and Retain Employees in a Job Loss Crisis**

The COVID-19 health crisis continues to have considerable economic and market consequences (Stuart, et. al., 2020), including for the Greater Bemidji Area. In this 30-mile radius encompassing the City of Bemidji, there are 3,859 businesses who collectively employee 39,257 people, and these businesses are struggling. Restaurants and other businesses have closed (Bemidji Pioneer, 2022) or modified open hours or offerings, primarily due to supply chain challenges, costs, and their ability to attract and retain quality employees (Kaori-Gurley, 2022). This has resulted in significant economic and market consequences for the Greater Bemidji Area and needs to be addressed. Specifically, the researcher proposes to investigate how Bemidji Area businesses attract and retain employees in a job loss crisis. This is critical, as the "two biggest concerns for employers are simply finding good workers and training them" (Robinson, 2000, p.X.). Example (La Venture, 2022, p. 7). You need to add the page number for the Robinson citation. The researcher will carry out an exploratory study using a non-probability convenience sampling method. A survey developed in Qualtrics will be distributed on social media to capture data from a minimum of 100 respondents 18 years of age or older, of any gender who reside in the Greater Bemidji Area. Data will be analyzed using descriptive statistics, cross tabulation, and triangulation to determine 1) how Bemidji Area businesses attract employees in a job loss crisis, 2) how Bemidji Area businesses retain employees in a job loss crisis, 3) the employment implications for Bemidji Area businesses resulting from the job loss crisis triggered by COVID-19, 4) identify employment (e.g., attraction and retention) solutions for Bemidji Area businesses, and 5) identify career readiness skills to increase employability by Bemidji Area Businesses.

Barton, Savannah

Institution: ***PA - Susquehanna University***

Discipline: Biology

Author/Contributors:
Evan Gailey,
Savannah Barton,
Antonio Rockwell

Abstract Name: Characterization of METTL3 in Drosophila melanogaster Embryogenesis

METTL3 is an essential evolutionarily conserved gene that methylates mRNA on adenosine at the N6 position (m6A). METTL3 has been linked to numerous biological processes including spermatogenesis, neurogenesis, and embryogenesis. Although there have been several studies done to date on METTL3, none have been able to suggest a mechanism in a required process that clearly explains its essentiality. We aim to be the first lab to propose a mechanism in an essential process, embryogenesis. Our lab utilizes Drosophila melanogaster to investigate the role of METTL3.We are currently working to characterize METTL3 throughout embryogenesis. Using immunohistochemistry, we find that METTL3 and m6A have a prominent localization pattern in the CNS starting around stage 12 of the embryo. Our data corresponds with previous work that determined METTL3 mRNA localization pattern around those stages while we are looking at protein. We find in mutants that embryos never develop to larval stage. Additionally, in mutants F-actin appears to be disrupted evident by phalloidin staining. Lastly, using RT-qPCR we find abnormal regulation of genes required for F-actin regulation and subsequently normal embryo development. Our data suggest that METTL3 may be needed for embryogenesis by regulating the essential structural protein actin. Our findings may be the 1st to provide a direct essential mechanism for this important gene.

Basaran, Riley

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Computer Science/Information Systems

Author/Contributors:
Riley Basaran,
Parker Stork

Abstract Name: Cybersecurity in Microgrid Environment

Today's electrical grid infrastructure reflects a trend towards the integration of computer network technology with traditional industrial control systems. This synthesis, often referred to as a "smart grid" would allow for more efficient transmission of electricity, reduced overhead costs for both producers and consumers, reduced peak demand, and more. However, it faces more critical cyber threats since it is the lifeblood of the nation's economy and vital to the health and safety of all residents. In June 2021, Colonial Pipeline paid roughly $5 million in ransom to hackers, and JBS paid $11 million ransom after a similar cyberattack. A report released by the Treasury Department found that around $590 million had been paid by victims of ransomware to their attackers in the first six months of 2021, as such attacks skyrocketed. Given the nature of computer network technology and the increasing prevalence of both state-sponsored cyberattacks and cyberterrorism, there is a clear need to harden such infrastructure to prevent its compromise. Our team in this cybersecurity microgrid testbed project is funded by the WiSys Ignite Grant, where we explore and study the possible cyberattacks against a microgrid. We first survey potential cybersecurity attacks, develop penetration techniques on a scaled-down version of a smart grid, and study the patterns of the successful cyberattacks. Referred to as a "smart microgrid", we attempt to infiltrate and disrupt it in order to better understand its weaknesses and the real-world implications of cyberattacks on critical industrial infrastructure and industrial protocols that are often overlooked.

Basavapatna, Sumanth

Institution: ***CA - San Jose State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Shivani Kota *Sumanth Basavapatna* *Meghana Pavuluri*
Sohail Zaidi

Abstract Name: Thrust Measurements of a Coaxial Rotor Helicopter along with Flow Visualization Between Rotating Blades

A robust thrust stand was developed for thrust measurements of a coaxial rotor helicopter. Thrust measurements were used to gauge the effectiveness of the mounted rotor blades. The thrust stand consisted of a load cell and a sensor for rotational speed measurements. A Degraw (HX711-5kg) load cell with strain gauges and a preamplifier was employed. The strain gauge response was recorded by an Arduino based system to get real time thrust measurements. Before using it for the thrust measurements, the system was calibrated with known weights and a calibration curve was established for accurate thrust measurements. A coaxial rotor helicopter (SKY/Rover King) was mounted on the thrust stand where thrust was measured as a function of rotor rpm. In order to optimize the thrust, the design of the commercial helicopter was altered to vary the distance between the opposite rotating rotor blades. Experiments indicate that the thrust peaked around 3000 rpm to about 25 N as the rotor speed was varied from 0 to 4000 rpm. Similarly, the separation between the two rotors was altered and an optimized separation between the blades was found. In order to understand the flow structures between the two opposite rotating rotors, flow visualization was conducted. This was achieved by incorporating a smoke generator along with a helium neon laser sheet that was set at various angles between the rotating blades. A camera was used to capture the motion of the smoke particles within the rotating blades. Images reveal the existence of wake and flow instabilities that are currently under review. Final presentation will describe the thrust stand design along with the thrust measurements at various operating conditions. The discussion on the flow visualization and its impact on the thrust measurements as a function of the separation between the two rotors will be included.

Bass, Christopher

Institution: ***GA - Morehouse College***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Christopher Bass,
Ethell Vereen

Abstract Name: Microbial and Nutrient Analysis of Water Quality in a Metropolitan area of North Georgia

Introduction: The quality of water in Georgia has been affected by a vast number of contaminants entering bodies of freshwater. Water quality is determined by a diversity of characteristics. In Atlanta, many microbial species can be found in freshwater. The literature highlights various contaminants that are found in urban watershed areas. However, what is yet to be determined is how microbial communities vary in metropolitan Atlanta and how the diversity of microbial species affects the water quality in a given region. A rigorous assessment of urban water quality is necessary to understand the factors controlling safe water sources. Hypothesis: Our study sought to determine how microbial species affect the quality of water by collecting samples along Proctor Creek, a source known for having a high number of contamination sources. Methods: Our trend analysis encapsulated a four-prong approach using a Horiba U-50 machinery, IDEXX apparatus, metagenomic filtration, and nutrients analysis system. Results: After testing 6 sites, our findings showed that Proctor Creek had more pronounced cases of enterococci and Escherichia. coli compared to the control. Conclusion: These findings are important because of the impact they can have on food sources, water quality, and the health status of individuals who reside in this area. Further studies are needed to determine how these findings serve as a social determinant of health for individuals residing in these nearby communities.

Bass, Eden

Institution: ***OK - University of Central Oklahoma***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Eden Bass

Abstract Name: Neuroqueer: Post-Normal Possibilities and The Intersectionality of Neurodivergence and Queerness

Neuroqueer is an intersectional experience and identifierused by queer and neurodivergent individuals. Neuroqueer was coined by Nick Walker in 2008 while she was writing a paper for her graduate class. Walker received a large response to this term and recognized the power that it holds. As the LGBTQIA2S+ community grows and theuniversal understanding of intersectionality expands, the need to understand a variety of experiences is necessary. The Autistic, ADHD, OCD, BPD, and neurodivergent communities make up a significant amount of the LGBTQIA2S+ community and their experiences should be considered. Understanding neuroqueer identities can aid in a social and cultural shift to the neurodiversity paradigm. This paradigm recognizes that neurodivergence is natural and one of the many beautiful aspects of human experience. This cultural and social shift will help deconstruct and re-educate on topics of neurodivergence, queerness, neuronormativity,and heteronormativity. This will helpmoveaway from infantilizing, dehumanizing, and othering neuroqueer individuals along with changing society'sidea of what normal is. Together, we can engage in neuroqueering our communities and embodying neuroqueerness in our day to day lives.

Bast, Allison

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Allison Bast,
Carolyn Seger

Abstract Name: A Spatial Analysis of Cellular Signal Strength in Western Wisconsin

Across the United States, rural areas have lower levels of education, higher unemployment, and fewer economic opportunities compared to urban areas (Singh; Siahpush 2014). Rural residents have lower levels of access to health care and health services, and health insurance coverage rates are lower as well; as a result, the health of rural residents is poorer compared to their urban counterparts (Laditka et al. 2009).For Wisconsin, the disparities between urban and rural populations are stark. National estimates identify about 20 percent of the U.S. population as rural; in Wisconsin that number is even greater at 26 percent. The lack of healthcare providers, longer distances to healthcare, and lower economic status for rural populations places extra burdens for both providers and patients to meet and receive needed care. Telehealth, through synchronous and asynchronous remote appointments, provides health care providers opportunities to connect with patients outside of physical office visits, especially in rural areas.Coverage maps provided by major carriers are overall generalized, therefore the use of direct telehealth options using video cannot be properly assessed. This study will focus on measuring cellular telephone strength in rural areas through the direct collection of cellular phone strength for both AT&T and Verizon phones. Data will be used to interpolate strength for areas not along roads and a probability map will be generated using a Kriging method. Resulting maps will aid health care providers with more specific information to best provide patients the best possible telehealth option.

Batista, James

Institution: *TN - Columbia State Community College*

Discipline: **Biology**

Author/Contributors:
Annaleisa Matzirakis *James Bautista* *Elvira Eivazova*

Abstract Name: **Discovery of a programmed frameshift in the tail assembly chaperone genes of the novel bacteriophage SeaWolves**

Bacteriophages are viral particles that specifically infect bacterial cells and have a potential use in the treatment of antibiotic resistant bacterial infections. The goal of this study was to characterize and annotate the genome of the novel bacteriophage SeaWolves that belongs to the EE bacteriophage cluster. Previously, we had discovered and annotated two other novel Actinobacteriophages of the EE cluster, Vanisius and Jannah, which we used for comparison in this study. EE cluster bacteriophages generally utilize the virulent lytic cycle and their genomes are relatively small in size with approximately 17,383 base pairs. The novel phages were isolated from soil samples using a known host, the soil-dwelling bacterium Microbacterium foliorum. Genome characterization and annotation were performed using PECAAN, Aragorn v1.2.38, tRNAscan-SE and DNAMaster annotation software tools. Our comparative genomic analysis demonstrated that SeaWolves and other EE cluster phages have a programmed translational frameshift in the tail assembly chaperone gene family. We identified and mapped the highly conserved slippery nucleotide sequence GGGAAAA within the tail assembly chaperone genes #10 and #11 by specifically searching for a slippery sequence motif across the 89 phage members of the EE cluster. The overlapping two open reading frames of these genes, resulting in production of two proteins, are flanked by the genes encoding the major structural components of the phage tail architecture. Further bioinformatics analysis showed the absence of the tRNA genes in the SeaWolves genome but generated strong evidence for strong conservation in the (-1) frameshifting site GGGAAAA. We conclude that such a consistent similarity in the EE cluster phages gene organization is not accidental, and that the programmed frameshift plays an important biological role, which has been conserved during phage evolution.

Batley, Isabel

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
Isabel Batley

Abstract Name: **A Comparative Legal Analysis of Geico v M.O.: How Insurance Companies in Wisconsin can Better Avoid Litigation**

In contract law, the plain meaning of words is the primary tool for interpreting agreements, but often there is sufficient ambiguity as to the plain meaning, and that requires additional clarifying text. Highlighting this challenge, this project explores how the otherwise plain language phrase “use of vehicle” can present challenges to determining coverage under auto insurance policies, thus exposing insurance companies to unwanted litigation.This scenario is currently being litigated in Missouri where the plaintiff is alleging that the act of contracting an STD during sexual intercourse in the parked car is a covered “use of vehicle” subject to liability coverage under the policy. Since this is a question of state law, this project seeks to predict how the Missouri case would be adjudicated under Wisconsin law. By applying Wisconsin statutory and common law to the facts of the Missouri case, the analysis reveals that insurance companies operating within Wisconsin must use more precise language and explicit legal definitions tomitigate litigation risk presented by the uncertainty as to how judges and juries will understand the “plain meaning” of insurance coverage language.

Batt, Sammi

Institution: *OK - University of Central Oklahoma*

Discipline: **Art/Music History**

Author/Contributors:
Samantha Batt

Abstract Name: **Mascots in Graphic Design**

Mascots are often underrated and looked over, but their design often influences our decisions about the brand that they represent. Mascots come in many different shapes and sizes, and they are designed to represent and portray what the brand stands for. Mascots are also designed to capture the attention of the consumers. Mascots have been around for over 120 years, and they continue to change and evolve over time. New mascots are always being designed and old mascots are getting redone, but these fun characters will always be around to influence us and our decisions.

battah, ayeat

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Ayeat Battah,
Mriganka De

Abstract Name: **Assessment of soil physical health in an intensive corn production system integrated with perennial cover crops**

Minnesota alone produces about 9% of the nation's corn production and has become the 4th largest producer of corn in the U.S. The corn (Zea mays L.) production system in the U.S. Midwest is important because corn is used for livestock feed, agricultural exports, consumer products, and biofuel production. Despite the high yields, intensive corn production has caused negative impacts on soil and environmental health. These impacts are aggravated due to monocropping and a lack of actively growing rooting systems, leaving the soil exposed to wind and water erosion for more than half of each year. Hence, it would be essential to eliminate the extended periods of bare soil in the intensive corn production system. Thus, by increasing our understanding of soil physical health, we may improve root health, increase nutrient and water uptake through weed control, and increase the yield potential of MN farms. Previous studies have investigated the promising impact of annual cover crops on soil health between regular annual row crop production, but low adoption illustrates the need for alternatives. This study will evaluate the effects of perenneal cover crops (PCC) on soil health and corn yields in hopes to develop an innovative and sustainable corn production system with PCC. Evaluation is completed through various soil health indicators (Gravimetric soil moisture content, maximum water holding capacity, aggregate stability, bulk density). We expect corn grown with PCC (60 inches row width) will not cause a yield reduction but improve soil physical health compared to conventionally grown corn (30 inches row width) without PCC. Best soil health might be expected in grass and legume mixture with corn as the system will add more organic matter with diverse root biomass and exudates, thus creating better soil structure and aggregates.

Bauer, Alicia

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Biology

Author/Contributors:
Chyann Nowland *Alicia Bauer* *Natasha Rayne*
Craig Sheaffer *Krishona Martinson* *Michelle DeBoer*

Abstract Name: Botanical Composition, Yield, Horse Preference, and Forage Nutrient Value of Pasture Treated with Different Soil Amendments

Forage is the foundation of a horse's diet, therefore, pasture management is critical to improve horse health, nutrition, and pasture productivity. The objective of this study was to evaluate botanical composition, horse preference, yield, and forage nutrient value of pasture treated with horse manure, horse compost, commercial urea fertilizer, and a no product control. Plots were 3 x 6 m and soil amendments were applied at recommended or commonly used rates in May 2022. Sample collection and grazing periods occurred in May, June, July, August, and October, each over a two-day period. Botanical composition, average height, maturity, and yield of the pasture was taken on the day prior to grazing. The next day, horses were allowed to graze for four hours with preference visually assessed at two- and four-hours post-grazing based on percent removal. Data were analyzed as a randomized complete block design using PROC MIXED in SAS with significance set at P ≤ 0.05. Season-long yield ranged from 1.2 to 1.5 tons per acre and did not differ across treatments (P>0.05). Botanical composition differed across treatments with the control having the most weeds (32%) and the least grass (62%) while manure treatments had the most bare ground (11%; P ≤ 0.05). Forage nutrients did not differ across treatments (P>0.05). Horses did not prefer pasture treated with manure and only 15 and 33% of forage was consumed after two and four hours, respectively (P ≤ 0.001). All other treatments averaged 53 and 78% removal after two and four hours, respectively. Based on differences observed in botanical composition and preference, commercial fertilizer and compost appear to be the most beneficial soil amendments to be applied on horse pastures.

Bauer, Cherokee

Institution: ***MI - Hope College***

Discipline: Theatre and Dance

Author/Contributors:
Cherokee Bauer

Abstract Name: Dressing the sky and stars: costume design for Silent Sky

What does it mean to leave a legacy you can't see? What does it mean to think past religious ideology? What does it mean to be a woman in the early 1900's, even more, a woman in science or a feminist fighting for justice? These are all substantial questions that the play Silent Sky by Lauren Gunderson delves into. This Fall 2022, Hope College's Theatre Department produced a production of Silent Sky directed by Rhett Luedtke. As the costume designer of this production, it was my responsibility to provide an intriguing and historically accurate set of costumes that best portray each characters' traits and a trackable visual of time and personality change throughout the play. Artistically, I had a pull towards exploring the roles that color, pattern, and silhouette play in each individual characters' appearance, however I also faced the additional challenge of providing historically accurate clothing for multiple periods of time. With the tools of artistic liberty and historical accuracy, I found creative ways to put together costumes fit for the time that also gave a visually appealing view of who each character was within the hour and a half you get to know them. An example would be how I put the character Annie in pants, as well as ties, as a means to show her fight against societal norms for women and her feminist morals. Using historical pictures and fashion plates, textual indication of characteristics, and weaving in the original and personal portrayal of the characters by their actors, I was able to finalize multiple costumes that best bring to light the director's vision for this production and show what it means to dress like powerful, smart, and righteous women.

Baumann, Nicholas

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Sociology

Author/Contributors:
Nicholas Baumann

Abstract Name: Personal Perception of Wisconsin FoodShare program and Effects on Food Insecurity

Food insecurity, defined as someone being unable to attain healthy or adequate amounts of food, is an issue that has affected around 12% of the US Population since 1996. Due to several factors, such as COVID-19, this number has recently increased to 18%. One of the groups most affected by food insecurity is college students, although this is often not incorporated in the larger dialogue to address the issue. As a result, estimates of college students experiencing food insecurity are roughly 46 to 50%. Because of perceptions about welfare programs, including Foodshare, students may not sign up for assistance despite showing the need for it. This study looks at the relationship between students' perceptions of welfare and food insecurity rates. Specifically, do these perceptions lead to students not signing up for Foodshare, which in turn leads to possibly higher rates of food insecurity on campus? To answer this question, I collect survey and interview data. I then analyze these data using quantitative and qualitative methods to find that many students do not have the proper knowledge of how to sign up for the Foodshare program, due to lack of or false information. Additionally, many students did not sign up for assistance because of political or personal rhetoric, even if that was against their better interest. Students stated that they often thought they were ineligible for the FoodShare program, or that the program wasn't for them because they had previously heard false information. The results of this study can be used to understand the various reasons, outside of a lack of physical access to food, that college students face food insecurity. Additionally, my results can be used to change Foodshare policy to ensure that the underserved population of college students are aided in obtaining food more efficiently.

Baumbach, Dylan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Connor Garland,
Dylan Baumbach,
Jack Grevious,
Emma Macken,
Jordan Witzel

Abstract Name: The effects of Time Poverty on Stress and Life Satisfaction in university students and workforce participants

In an increasingly connected world, where work and school are just a click away, work-life has integrated more and more into personal-life taking more of one's personal time. Advancements in telecommunication, telecommuting to work, has contributed to an 'always on' culture that values productivity and always being available. In light of this, there is limited research on perceived time poverty. This study examines perceived time poverty in conjunction with environmental demands and their effects on stress and life satisfaction in the context of university students and workforce participants. A survey using scales on time poverty, irritation, and environmental demands were used in a quantitative analysis to measure their effects on stress and life satisfaction.

Baumgartner, Samantha

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Samantha Baumgartne,
Jaydin Romalia

Abstract Name: Charcoal Analysis of a Sediment Core from Mud Lake, WI

The Middle-Mississippian people settled in southern Wisconsin around A.D. 1050, near what is now Aztalan State Park. The site was occupied for two hundred years until it was abandoned around A.D. 1250, however little is known about why the Mississippian people chose to leave the site. A sediment core was collected from Mud Lake in Jefferson County, Wisconsin (43.05°N, 88.92°W) in January 2014 for the purpose of developing a climate record for the Aztalan site (43.08°N, 88.86°W). A charcoal record is currently being developed from the sediment core for the purpose of examining the links between climate, vegetation, fire, and anthropogenic activities in the region over the past 2,000 years. Different types of fires produce different forms of charcoal, and classification schemes exist to differentiate between the climate-driven and human-derived fires. Charcoal is analyzed in 1 cm increments and each centimeter of sediment is extracted from the core, treated with hydrogen peroxide and sodium hexametaphosphate, sieved through 125 µm mesh, and dried at 50°C for 48 hours. Samples are counted for the presence of charcoal using a stereomicroscope and 5-50x magnification. Dating of the sediment core combines radiocarbon and lead-210 dating techniques. Charcoal from the pre- and post-settlement of the Aztalan site will aid in differentiating between human and natural fires, and other geochemical analyses completed on the core will be presented to corroborate our interpretation. This will help us develop a better understanding of the role climate played in the abandonment of the Aztalan site.

Baur, Lauren

Institution: ***KY - University of Kentucky***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Lauren Baur *Sushant Prajapati* *Ramkumar T. Annamalai*

Abstract Name: Tunable membrane-cloaked hydrogel nanoparticles for targeted delivery of senolytics to osteoarthritic joints

Introduction: Osteoarthritis (OA) is a common degenerative joint disease resulting in articular cartilage degradation, synovium inflammation, meniscal alterations, and chronic pain. Current therapies mainly address symptoms rather than the disease itself. Recent studies show that senescent cell accumulation in the articular cartilage and synovium significantly contributes to OA development. Senescent cells undergo irreversible cell cycle arrest resulting in an inflammatory phenotype negatively affecting adjacent healthy cells. Senoyltics are a new class of drugs that eliminates explicitly senescent cells. Here, we describe a strategy using membrane-cloaked hydrogel nanoparticles (McNPs) for sustained release of senolytics that specifically eliminates senescent cells to reduce cartilage damage and OA progression.Methods: McNPs were synthesized by encapsulating photocrosslinkable poly-ethylene glycol-vinysulphone (PEG-VS) hydrogels within lipid vesicles made from a mixture of 5.2 µmol DOPC, 4.5 µmol cholesterol, 0.3 µmol DSPE-PEG2000, and 0.015 µmol DSPE-PEG2000-maleimide.Results and Discussion: The extrusion of the lipid mixture yielded homogeneous vesicles with an average size of 145 ± 56 nm in diameter and a poly dispersive index (PDI) of 0.094. When PEG-VS monomers (5 wt.%) were added to the mixture, it yielded McNPs with crosslinked PEG hydrogel core. The properties of the core hydrogel can be tuned to sequester and release senolytics at a desirable rate. The McNPs (with 5% PEG) had a diameter of 185.5 ± 88.4 nm and PDI of 0.211, indicating stability. They remained stable for two weeks in PBS, maintaining their unilamellar structure. Compression testing on the core PEG hydrogel formulations showed that stiffnesses of 11.8 kPa to 42.3 kPa can be achieved by varying crosslinking density and monomer concentration. Currently, we are evaluating their in-vitro performance.Conclusions: Overall, we have synthesized McNPs that are homogenous, stable, and tunable. These are potent delivery vehicles that can be used as a disease-modifying therapy to reduce the burden of OA.

Baxter, Sofia

Institution: *UT - Utah State University*

Discipline: Political Science

Author/Contributors:
Sofia Baxter

Abstract Name: **Heaven's Second Son: Crafting Legitimacy and Nationhood in the Taiping Rebellion**

The fourteen year period known in the West as the Taiping Rebellion is among the most significant conflicts in Chinese history, yet it is too often overlooked by Western academics in analysis of China's political modernization. Hong Xiuquan's Taiping Heavenly Kingdom (also known as Taiping Tianguo or Heavenly Kingdom of Great Peace) represents the first uprising to challenge Confucianism as the underpinning political philosophy and ideology of the imperial system; a threat to both the institutions that had governed China for millennia as well as reigning social and cultural forces of the Qing dynasty. As such the movement required radical recontextualization in order to claim legitimacy and gain ground among the lay population. The Taiping Rebellion attempted widespread appeal by utilizing a blended philosophy of Old Testament styled Christianity with elements of early Confucian ideologies as well as leaning into anti-Qing class and ethnic tensions. Hong Xiuquan crafted a unique political and religious framework that grafted a pared-down Christianity with heavy emphasis on the Ten Commandments onto a heritage of Chinese utopianism (datong 大同) from the Zhou Dynasty Book of Rites, Confucian familial order and its more egalitarian tenets, and co-opted the growing class and economic divide between Han peasantry and Manchu gentry in the Eight Banner system. By casting himself as a 'second son' of heaven, Hong was able to craft a unique bent on the established mandate of heaven narrative separate from state Confucianism that was still digestible to peasantry, one that gained further support from the grassroots by promising something akin to proto-communist land reform during a period of increased tax burden on peasantry.

Bayerl, Brooke

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Psychology/Neuroscience

Author/Contributors:
Harrison Thiry *Farhiya Muhidin* *Cleo Opoku-Owusu*
DeNae Bube *Megan Dobner* *Brooke Bayerl,*
Riley Kangas

Abstract Name: **Inversion of In-Group Favoritism in Adversarial Conditions**

Introduction: In-group favoritism (Sumner, 1906; Taijfel & Turner, 1986) is the phenomenon of giving preferential treatment towards individuals within the same perceived social group (e.g., age, race, gender).
Purpose: To experimentally assess whether in-group effects will negate and even invert when one party exhibits actions / demands that exceed the boundaries of a normal in-group association.
Procedure: See Appendix. We created a workplace scenario where the participant assumes the role of a co-worker. In the first segment, the participant is assigned to work with Mary, who requests some minor favors (baseline condition), and responds to the five assessment items shown in the Appendix. In the second segment, Brittany joins the workgroup, and does things that should go beyond in-group boundaries (inversion condition), and then the participant responds to the same five items.Hypotheses: (1) sum of the five ratings will be significantly lower in the inversion (I) condition relative to the baseline (B); (2) participants who are around the same age as the scenario models will show a stronger inversion difference relative to those who are not; (3) because of its nurturing facets, the Big Five trait agreeableness will moderate the effect such that more agreeable participants will be less affected by the inversion effect.
Participants: 63 total from convenience and classroom samples, age ranging from 16 to 62.Results:Hypothesis 1: Baseline (mean=17.4, sd=3.0), Inversion (mean=10.8, sd=3.3), t=14.82 (p<.00001)Hypothesis 2: Same age (B-I mean=3.94, sd=3.6), different age (5.1 / 2.9), t=2.09Hypothesis 3: Correlation Agreeableness vs B-I difference r = -.24 (p<.05)Discussion: H1 was supported, H2 was significant but in the wrong direction (non-matching aged participants showed a larger inversion effect), H3 was supported (more agreeable, smaller B-I difference). Follow-up research suggested for H2

Bayne, Austen

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Austen Bayne,
Morgan Rud,
Emilie Greene,
Jordan Kimmet,
Rachel VanKeulen

Abstract Name: **The Influence of Glypicans on Glioblastoma Tumor Progression**

Glioblastoma (GBM), also termed grade IV astrocytoma, is a form of brain cancer with about 3 per 100,000 persons developing it either through de novo, or progressively from lower grade astrocytoma. Though this disease is rare, it is fatal with GBM patients typically having a 40% chance of survival the first year, and a 17% chance of survival the second year after diagnosis. GBM has no known cure and limited treatment options that consist of surgery followed by radiation and chemotherapy. One novel area to look at for treating glioblastoma is glypicans. Glypicans are receptors that reside on the cell surface and consist of a core protein with heparan sulfate chains, and a glycosylphosphatidylinositol (GPI) anchor. Glypicans in general play a role in tumor proliferation by regulating cell growth as well as cell signaling. In this study, we compared the difference in growth between GBM cell lines and CRISPR edited GBM cell lines that have a nonfunctional glypican-1. The glypican-1 knockout (KO) cells had reduced tumor growth compared to the unedited GBM cells. These results suggest that further investigation is needed on glypican-1 as a potential therapeutic target for treating GBM patients.

Bearden, Kendall

Institution: *AL - Samford University*

Discipline: **Mathematics**

Author/Contributors:
Kendall Bearden,
Sarah Westmoreland,
Kwadwo Antwi-Fordjour

Abstract Name: **Role of Fear in an Eco-epidemiological Model with Species Aggregation**

In this talk, an eco-epidemiological model with species aggregation and disease in prey subject to fear of predators will be discussed. We assume that the reproduction of the susceptible class of the prey population is affected by fear induced by the predators. We present some basic mathematical results such as positivity, boundedness, and local stability. The coexistence of the species at the endemic state is possible for our proposed model via numerical simulations. This coexistence equilibrium can be destroyed by increasing the strength of fear of predators. We will show that the strength of fear can create and destroy the coexistence equilibrium. In some cases, we will show that the strength of fear can drive a stable endemic state into extinction in finite time. We will also present some interesting and rich bifurcation behaviors revealed by our model.

Beaver, Brayden

Institution: *NC - Western Carolina University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Brayden Beaver,
John Kiger,
Juan Castillo,
Andrew Warner

Abstract Name: **Small Modular Reactor Based Microgrid Cost Optimization**

The goal of this research is to develop case studies for clean microgrid systems (CMS) at selected test locations. The problem being faced is making CMS a reliable source that matches the required loads, as well as reducing the costs to make these energy systems affordable.Recently, an increase in generation ramp rates for small modular reactors (SMR) has been developed and there now exists a potential decrease in the cost of implementing and operating CMS.To design these case studies, load data was extractedfrom the New York Independent System Operator (NYISO) and the California IndependentSystem Operator (CAISO). Wind and solar data were collected from theMERRA-2 dataset from theNational Renewable Energy Laboratory(NREL). Power calculations were implemented through MATLAB and Excel to develop wind turbine power curve equations, and the NREL's System Advisory Model (SAM) software processed various solar panels to determinethe yearly renewable power resource.Often hybrid generation systems (HGS) require a battery storage system to offset demand peaks. In HGS, the battery storage is often one of the costliest components. In our HGS model, the NuScale SMR module was implemented with two different generation ramp rates. Sequentially, the effects on the overall cost of the system were analyzed. In all case studies executed, as ramp rates increase the batterycapacityrequired was reduced and nuclear capacity was increased by 35% on average.Then, withthe reduction or elimination of the battery,the Levelized Cost of Energy (LCOE) decreased by approximately 48%. This research suggests that an increase in ramp rates for SMRs, results in a significant cost reduction when implementing a clean HGS. Lowering of costs, positively influences the transition to clean power generation, which is crucial in lowering global carbon levels and decreasing the effects of global warming.

Beck, Rose

Institution: *TX - Texas Woman's University*

Discipline: Nursing/Health Science

Author/Contributors:
Rose Beck *Kristine Morris*

Abstract Name: **Racial/Ethnic Disparities in Kidney Transplant Rates Before and Throughout SARS-CoV-2 (hereafter referred to as COVID-19) in UNOS Region 4**

Background/Introduction: Between February and April 2020, the start of COVID-19, deceased and live-donor kidney transplants (KTs) decreased by 42.9%. KTs are already not performed equally across racial groups with the lowest rates of transplants being among American Indians/Alaska Natives and Blacks and the highest rates in Whites and Asians. This is particularly problematic because Black candidates are three times as likely to develop End-Stage Renal Disease (ESRD) as compared to non-Hispanic and White candidates but half as likely to receive a transplant, despite making up 30% of the United States (US) population and 13% of ESRD patients. The implementation of the Kidney Allocation System (KAS) in 2014 attempted to decrease these disparities, but the impact was limited.Purpose/Methods: A two-way Analysis of Variance (ANOVA) was conducted using data from the Organ Procurement and Transplantation Network (OPTN) to identify variance in the means of transplant rates across minoritized groups in UNOS Region 4 (Texas and Oklahoma) before and after the start of the COVID-19 pandemic. The two-way ANOVA was chosen over the one-way to determine the effect of COVID-19 on transplant rate recovery rates across racial/ethnic groups.Results/Limitations:There was no significant variance in the recovery of KT rates by race after the start of COVID-19 restrictions in the U.S. However, this analysis was limited to one UNOS Region over a 4-year period and excluded live-donor KTs and multiorgan transplants.Conclusions/Implications for Practice: These results challenge the argument that the KAS failed to decrease racial disparities in KTs. Even in a global health crisis, KT rates recovered equally across all racial groups. This suggests that progress has been made toward equitable access to KT. Further research is needed to determine if UNOS Region 4 was representative of the rest of the U.S.

Beck, Shannon

Institution: *VA - James Madison University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Shannon Beck

Abstract Name: **Analytical Results of Commercial Cannabinoid-Infused Gummy Candies for CBD and THC**

Cannabis sativa is an annual plant that produces phytocannabinoids that have alleged medical benefits. A variety of dietary supplement products containing varying amounts of cannabidiol (CBD), tetrahydrocannbinol (THC), and other cannabinoids extracted from cannabis plants are now available. One of the most common dietary supplement product types with cannabinoids are gummy candies, which are made by combining gelatin, pectin, sugars, flavoring, and dyes with extracts from hemp or marijuana plants. Cannabinoid infused gummies have grown into a large market across the United States due to the legality of non-delta-9 -THC cannabinoids. These gummies are are not sold in state-run dispensaries and are not considered controlled substances. Consumersuse these infused products for medical purposes such as chronic pain, muscle soreness, and sleep problems. These gummies may have different amounts ofvarying cannabinoids that do not match label descriptions for mass levels per dose. We have been analyzing various gummy candy products to determine if manufacturer claims are reliable. State compliance testing is required for products marketed in dispensaries, but is not enforced for products sold in non-dispensary storefronts.Analysis of the gummies follows the state-compliance testing method for products sold in dispensaries. Analytical steps include dissolution in water and extraction by salting with acetonitrile. Ultimately, Ultra High-Performance Liquid Chromatography-Ultraviolet Detection (UHPLC-UV) calibrated with an eleven component standard was used for analyses. Results to date indicate that there is considerable difference between market claims and actual cannabinoid amounts in many gummy products sold outside of dispensaries.

Becker, Elliott

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Elliott Becker,
Karin Bodensteiner

Abstract Name: **Timing of Puberty in Mice Transgenic for CCL2**

Chemokines are a class of cytokines, which are small proteins involved in cell signaling. CCL2 is an inflammatory chemokine involved in immune response. Mice transgenic for the CCL2 chemokine under the regulation of human glial fibrillary protein (GFAP) promoter will overexpress CCL2 in glial cells of the brain. Specifically, these glial cells can affect the hypothalamus, which moderates hormone secretion in puberty. In addition, GFAP expression in the hypothalamus has been shown to be dependent on stage of the estrus cycle, thus, mice transgenic for over-expression of CCL2 can serve as a model for understanding how CCL2 impacts reproductive processes. Previous research in our laboratory found that pups born to females transgenic for over-expression of CCL2 weighed more than pups born to wild type females on 8 out of 12 post-natal days, and female pups born to transgenic dams went through puberty later than those born to wild type dams. However, proportion of time that adult females spent in each phase of estrus did not differ. We are now interested in examining timing to puberty in males and estrus cyclicity in peripubertal females. To determine if CCL2 has an effect on the rate of puberty of transgenic mice, we will be measuring and comparing timing to puberty in young transgenic and wild type mice. Following weening, we will be measuring the time until puberty by checking for vaginal opening in females and preputial separation in males. Once the females have gone through puberty, vaginal cytology will be conducted as a means of measuring estrus cycle length. We hypothesize overexpression of CCL2 in transgenic mice will influence timing of puberty in male mice and estrus cyclicity in peripubertal female mice. We have begun breeding and anticipate starting data collection on timing of puberty in 3 weeks.

Bedford, Felicia

Institution: ***PA - Duquesne University***

Discipline: Biology

Author/Contributors:
Felicia Bedford,
Brady Porter,
Lauren Sugden

Abstract Name: Species Identification Through Bioinformatics Techniques Helps Determines DNA Sequence Variation Present

Environmental DNA (eDNA) analysis from water samples using the metabarcoding approach is a rapidly developing tool to examine community assemblages and requires bioinformatic processing to recover and produce accurate results of species' genomes. With the implementation of new bioinformatics techniques in conservational biology, species identification from barcoding genes can further examine intraspecific haplotype diversity and supplement traditional field surveys with non-invasive methods. Here we develop a bioinformatic pipeline to identify freshwater fish species from Illumina MiSeq metabarcoding sequenced data of the mitochondrial COI gene recovered from field-collected water samples. In addition to providing accurate species-level identifications, we attempt to delineate intraspecific haplotype data for population analysis of the most common species. Reference files were created using the NCBI GenBank database and were implemented in blast searches to identify target species. The species list, however, is not exhaustive, and several different types of fish could match with the same barcode. We seek to find a more inclusive method of capturing species identity utilizing operational taxonomic units, OTUs, and overall gene alignment while relying less on reference lists. This work's results will help determine the genetic variation and population health of fish species in Buffalo Creek, Armstrong, and Butler Counties, in Southwestern Pennsylvania.

Beebe, Annika

Institution: ***VT - Norwich University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Mercedes Bishop *Helene Sisti* *Elias Gabrielsson,*
Annika Beebe

Abstract Name: Exploring the Contextual Interference Effect Using a Bimanual Coordination Task

Stroke, amyotrophic lateral sclerosis (ALS), and other movement disorders result in loss of upper limb function, thus impairing bimanual coordination. Motor imagery is an effective clinical intervention for accelerating recovery; however, the cognitive and neurophysiological parameters that inform effective strategies remain elusive. The study aims to explain the neural dynamics that underlie bimanual coordination during real and imagined movement. Healthy young adults (n=13) learned a visuomotor tracking task using either one or both hands in a single session. Two dials control the movement of an on-screen cursor. The left and right dials correspond to vertical and horizontal cursor movement. The participants were tasked with tracking a moving target using the left and right dials with the appropriate speed and direction. Before the session, each participant was fitted with a 40-channel EEG cap (Compumedics, Neuroscan). Two phases were tested: unimanual and bimanual control. The first phase consisted of unimanual control using the left hand to draw a vertical line and the right hand to draw a horizontal line. The second phase consisted of bimanual control in a 3:1 pattern followed by a 1:3 pattern. The pattern notation represents the ratio of left-hand turns to right-hand turns. Trials were 10 sec in duration, elapsed time from target origin to target endpoint; the intertrial interval (ITI) was 5 sec. Each trial block was followed by a mental imagery condition (MI) where participants were asked to imagine performing the task they had just completed with their eyes closed. Mental chronometric data were collected, and vividness ratings were assessed by self-report immediately after each trial block. The results indicated learning in a single secession; [$F(1,10)=19.43$, $p<.001$]. EEG analyses of active vs. rest conditions, and real vs. imagined conditions, are underway. These results may inform neurorehabilitation strategies for patients recovering from movement disorders (upper limbs).

Beesley, Brandon

Institution: ***OH - Capital University***

Discipline: Philosophy/Religious Studies

Author/Contributors:
Brandon Beesley

Abstract Name: An Analysis of the Overlooked Value of Greatness

Greatness is a prevalent topic within philosophy of which many interpretations are offered, ranging from Aristotle's virtue-driven megalopsychos to Nietzsche's power-hungry übermensch. Humanity's persisting interest in the idea of greatness is undeniable– the desire for achievement can become obsessive, overwhelming and, for many, anxiety inducing. While there have been innumerable attempts to explain what greatness is, there is little to no scholarship on why we burden ourselves with the pursuit of greatness, consequently and uncharacteristically placing ourselves in a position of angst and vulnerability. The risk of failure and embarrassment loom menacingly behind displays of ambition, seemingly incompatible with the visceral desire for achievement many of us find so familiar.This paper attempts to primarily fill this absence and offer a conceptual analysis of greatness' value (why we feel the need to strive) while simultaneously remedying errors in the current philosophical concepts of greatness. Ideally, the concept of greatness and its value will offer solace and encouragement for those facing the anxiety and detriment that is all too often concomitant with the human desire for achievement. A coherent conception of greatness and its value will perhaps create an entry point to easing the variety of stresses and pressures that come with the pursuit of greatness. To accomplish this, the paper introduces multiple perspectives from prominent philosophers both of old (Plato, Aristotle, Saint Thomas Aquinas) and more contemporary (Nietzsche, Amy Allen, Virginia Held) through a critical lens. Using relatable, real world examples that promote interaction from a wide readership, a logical analysis and structural critique of each philosophy is conducted. Finally, a concept is offered and argued that finds both power and virtue are critical, even intrinsic, characteristics ofgreatness and its value.

Befus, Amanda

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: History

Author/Contributors:
Amanda Befus

Abstract Name: The Foundations, Origins, and Scope of the Anti-CRT Movement

The purpose of this research is to understand the depth and scope of the recent anti-CRT criticism surrounding America's public-school history curriculums, to find explanations behind these criticisms, and to gain insight for how they will affect American public schools and educators in the future. The core methods of this research involved searching through digital, legislative, and tax documents. Through examining historical perspectives, this research pieces together the foundations of the current challenges facing public schools, as well as how they evolved to into the current anti-CRT movement. While researching historical examples such as Harold Rugg from World War II, and Gary B. Nash's National Social Studies Standards of the 1990's, it became clear that this is not the first time in which critical thinking in public-school history classrooms has been under scrutiny by conservative Americans. The second component of this research delves into the origination of this current movement. Christopher Rufo, a conservative journalist, twisted the term "critical race theory" as a controversial buzzword. In a country struggling through online schooling and reckoning over racially motivated police brutality, critical race theory took center stage in school board meetings and political debates as a contentious fight over the education of our racial history ensued, resulting in protests and legislative action. The results of these challenges lead to my final area of research, examining the implications for educators, legislators, and the future of America's public schools. The anti-CRT movement is a political movement that has successfully turned conservative Americans against the teaching of an accurate account of America's racist past, challenging Americans to learn about, reckon with, and come together to face the racial tensions that underly America's history and founding.

Behling, Thomas

Institution: *OH - University of Toledo*

Discipline: Biology

Author/Contributors:
Thomas Behling,
Subha Kumpaty

Abstract Name: **A Realistic Brain Phantom for Advanced NeuroImaging Quality Assurance**

Magnetic Resonance Imaging is a mainstay of medical diagnosis; its ability to non-invasively image a patients interior structures without the use of x-rays places it in position of great prominence in the field. Despite this prevalence, there is a noticeable lack of representative phantoms for MRI calibration. While phantoms for this purpose exist, they are, in general, non-representative and consist principally of a single-material, and as such cannot be used to monitor contrast differences, and instead are usually used to determine stability of the machine over time. The scope of this project was to construct and test a realistically shaped brain phantom using agar gel in order to better calibrate MRI machines. For this purpose, 3D printing had an attractive set of advantages; its ability to reproduce complex, organic shapes easily and quickly was utilized to reproduce the complex, organic shape of the human brain. First, a simplified, geometric phantom was created to verify the efficacy of the gel recipe, the effectiveness of several possible waterproofing materials, and to solidify the final process. This phantom was then evaluated for its geometry and longevity, as well as its accuracy in mimicking the relevant properties of the human brain, specifically the T1 and T2 relaxation times. The end goal is to evaluate this phantom for its effectiveness as a tool for calibrating MRI machinery.

Behnke, Alex

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hunter Dutkiewicz,
Melissa Gregg,
Alex Behnke

Abstract Name: **An EEG Investigation of the Discrepancy Between Auditory and Visual Memory**

Previous research has indicated that visual recognition memory has a much larger capacity than auditory recognition memory. The purpose of this study was to investigate the disparity between the two memory systems by examining the neural circuitry involved in accurate recognition of visual and auditory stimuli, to examine the size of the discrepancy between auditory and visual memory across the lifespan, and to measure the relationship between working memory ability and recognition memory. In Experiment 1, participants completed a recognition memory task while neural responses were recorded with a 32-channel Brain Vision EEG system. Participants received a study phase with pictures/sounds, followed by an immediate recognition memory test. During the memory test, participants were presented with pictures/sounds that were old (presented during study), new (not presented during study), or exemplars that were variants of objects presented during the study phase. Participants were instructed to classify each picture/sound as “old” or “new” by pressing a corresponding key. In Experiment 2, participants ranging from 18 to 65 years of age completed a working memory assessment, followed by the recognition memory task from Experiment 1. The data analyses have the potential to indicate whether the discrepancy between visual and auditory memory is related to changes in gray matter density of the prefrontal cortex as we age. The results of this study will also improve our understanding of the connections between auditory memory, visual memory, and general cognitive ability and will allow a better understanding of the relationship between memory and general cognitive decline.

Behnke, Elijah

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Chemistry/Materials Science

Author/Contributors:
Elijah Behnke

Abstract Name: **Synthesis of Nanofluidic Suspensions with High Solid Loading and Low Viscosity for Energy Storage and Conversion Applications**

Colloidal suspensions of nano-sized materials (or particles) in liquid media like water or alcohols have been historically investigated for their superior thermal properties. They are typically used as heat transfer fluids in industrial and automotive cooling applications. More recently, functional nanomaterial suspensions (referred to as nanofluids) have also been investigated as catalytic media for chemical reactions, solar harvesting applications, and electrochemical energy storage (battery) applications. Complex and novel behaviors exhibited by such fluids have resulted in many theories proposed to explain their thermophysical properties such as viscosity and thermal conductivity. Here, we report on the synthesis of nano-sized particles of Nickel (II) hydroxide (known to have stable redox chemistry) using a chemical precipitation method. Appropriate surfactants were used to effectively limit the diameter of the particles to less than 1 micron. Particle size, morphology, grain size, and crystallinity have been confirmed through various analytical methods such as electron microscopy (SEM), dynamic light scattering (DLS), and X-ray diffraction (XRD). Additionally, solid-state battery electrodes were produced, to test the redox activity of the particlesthrough repeated electrochemical cycling. Recent results include the preparation and testing of suspensions of these nanoparticles in water-based fluids to understand electrochemical activity in a flowable fluidized format.Additional properties of these fluids have been monitored as well, including stability (against sedimentation due to gravity) and viscosity as a function of solid content (0.1 to 50 wt.%). Preliminary designs of electrochemical cells to utilize these nanofluids for energy storage as well as conversion applications will also be discussed.

Behnke, Kayla

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Rakib Islam

Abstract Name: **On the Effectiveness of Augmented Data Generation of Brain Tumors Using GAN based Techniques**

Deep learning models have shown promising results in the computer-assisted diagnosis of brain tumors from images. The training data should be sufficient with high quality and generalized characteristics to train the deep learning models accurately. However, in the medical domain, the training data is limited, as it is difficult to collect sufficient patient data because of the problem of patient recruitment, the burden of annotation of lesions by experts, and the invasion of patients' privacy.Researchers have developed different automated Data Augmentation (DA) techniques, such as scaling, cropping, flipping, and Affine transformation, to overcome the problem of limited data for training. Recently, Generative Adversarial Network (GAN) based DA techniques, such as TumorGAN, PCCGANs, and CPGGANs, have shown improved results in generating augmented data. However, the evaluations of the existing GAN-based DA techniques can be questioned as the experiments were conducted either on small-sized datasets or included only some of the available datasets. In this study, we conduct a rigorous investigation to determine the effectiveness of the GAN-based DA techniques by applying those in all the available Magnetic resonance imaging (MRI) datasets.

Behr, Elizabeth

Institution: ***WI - Madison Area Technical College***

Discipline: FAN Abstract

Author/Contributors:
Elizabeth Behr,
Kitrina Carlson,
Kristine Horabik,
Elise Van Ginkel

Abstract Name: Community College "CUREs" Engagement Deficits in Biology

Madison Area Technical College (Madison College) is a public technical and community college serving Madison, WI, and the twelve surrounding counties. Total enrollments exceeded 24,000 students in the 2021-22 academic year, with 42.2% of entering full-time students in Fall of 2020 continuing the following Fall. The Liberal Arts transfer program offers seven tailored pre-majors designed for transfer and satisfaction of the first two years of general studies at some institutions, with the University of Wisconsin-Madison serving as our largest transfer partner. A federally funded initiative to improve transferstudent success through the establishment of Course-Embedded Undergraduate Research Experiences (CUREs) was established in majors' biology courses beginning in Fall 2018. This project has resulted in over 500 students participating in skills-focused CUREsin biology courses, and is expandingbeyond the target courses to include related courses and programs. Prior to our CUREsimplementation, only 18% of students completed abiology majors course series within two semesters. After CUREsimplementation, 32% of students complete abiology majors course series within two semesters.Our panel will discuss this, and otheroutcomes of implementingCUREsin our biology courses, as well as the challenges and opportunities associated with implementing CUREsat a community college. Details about two of our collaborative CUREsinitiatives, including ourwork implementing Tiny Earth and Sea Phages across three different biology courses will be highlighted.

Beining, Brianna

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Communication/Journalism

Author/Contributors:
Brianna Beining

Abstract Name: A Rollercoaster of Emotions: How Non-Dancers Interpret Emotions Communicated through Dance Performances

This article explores the ability of non-dancers to interpret and understand emotions conveyed through dance movements and facial expressions. Dance and nonverbal communication work together to shape the human experience and contribute to the perception of the surrounding world. The art of dance breaks down communicative barriers and allows people to build deeper relationships with others and within themselves through nonverbal communication and emotional expression. Dance relies on the human body to convey messages because it is constantly serving as a medium for communication. The ability of the human body to be a communicative medium is a phenomenon often overlooked in a world consumed by media usage and other daily complexities. Natural and impulsive body gestures and movements have meanings that are interpreted and often universally recognized; they make people feel a certain way and understand things they otherwise may not. Dance is a form of movement that is filled with stories and meanings without using any verbal cues. This study draws conclusions based on nonverbal communicative patterns through dance movements and facial features. It will explore factors that may moderate the messages people receive when viewing dance performances including culture, age, sex, personality characteristics, and intelligence.By enacting the communication sensemaking theory, people make sense of nonverbal actions they see, including dance performances. The sensemaking theory guides people's development of an interpretation perceived from an observation by linking observed phenomena to past experiences. The ability to effectively apply this theorywill further be explored in this article. This article will investigateprocesses people use to decode meanings from body movements and presumptions of messages they understand.

Beise, Leah

Institution: *MN - Anoka-Ramsey Community College*

Discipline: Biology

Author/Contributors:
April Ost *Elizabeth Gonzalez* *Leah Beise*
Marie Andersen *Paula Croonquist*

Abstract Name: **Identification and Annotation of Chico and Foxo Orthologs in Drosophila Species to Understand the Insulin/Tor Pathway Evolution**

The Insulin/Tor (IT) pathway is a crucial signaling pathway responsible for metabolism and glucose uptake, and has influence on longevity, fat/protein metabolism, and cell growth. Inaccurate regulation of this multi-functional pathway plays a key role in many well known human diseases, from diabetes to cancer. Chico– a gene involved in the IT pathway– encodes for a substrate responsible for positive regulation of the insulin receptor's (InR's) binding activity. Past research on network architecture has found that a gene's constraint level is affected by its connectivity and position in the pathway. Ponce et. all showed that IT pathway genes closer to the membrane evolve faster than downstream counterparts. We hypothesized that, due to its involvement in the crucial IT pathway, chico's orthologs are conserved in the target species D. elegans, D. ficusphila, D. miranda, and D. hydei, and their protein identities would decrease according to phylogenetic distance from the reference species D. melanogaster. However, we predicted that chico's selective constraint will be weaker than other pathway elements (i.e. FOXO) because of its upstream position. Chico's putative orthologs were annotated in all four target species and modeled with tools from the Genomics Education Partnership (GEP) pipeline, including the UCSC Genome Browser, tBlastn and Blastp searches, the Gene Record Finder, and the Gene Model Checker. The target species' protein alignments were examined, roughly spanning 45%-80% similarity to the reference species. The average protein identity percent was lower than FOXO's, supporting our hypothesis that position in the pathway is inversely related to selective constraint. Additional species genomes have been recently added to the GEP pipeline. Future studies across those genomes will strengthen our findings.

Belka, Sarah

Institution: *MN - University of Minnesota - Duluth*

Discipline: Biology

Author/Contributors:
Sarah Belka

Abstract Name: **Comparing Cave, Intermediate and Surface Astyanax mexicanus Swimming Speeds and Metabolic Oxygen Consumption**

The Mexican Tetra, Astyanax mexicanus, is a model organism for population genetics, circadian rhythms, and evolution thanks to their various populations. A. mexicanus has been classified in three unique factions: trogolomorphs, surface and recently introduced cave populations (intermediates) with populations of each throughout Mexico and Texas. With populations spread over different environments and geography, it was thought that the three factions are more genetically distinct. This is no longer the case, because cavefish face periodic flooding events, due to their cave environment and weather patterns. These flooding events require strong swimming abilities to navigate these higher velocities and wash cavefish into environments where they can interact with surface or intermediate fish. I hypothesize that cave fish will have a lower Ucritical or maximum sustained swimming speed than the intermediate and surface populations. Fish from cave, intermediate, and surface populations (n=8 for each population) were tested in a Loligo Swim-30 flow-through respirometer. Each trial included a one-hour acclimation time, ramp to 70% of the maximum speed and then stepping up by 0.2BL/s every 20 minutes (step test). Ucritical-values were calculated via dividing the time of the last step test before giving up, multiplying by the last unsuccessful step speed, and then adding to the last successful step speed. Cave populations had a lower Ucritical value (avg=6.0) than the intermediate (avg=11.2) and surface populations (avg=11.5), respectively. Metabolic oxygen data was collected by the swim tunnel oxygen probe during each trial. Surface fish have higher metabolic oxygen rates per flow speed than intermediate fish. This data aims to explains if intermediate Astyanax mexicanus are different from cave and surface morphs.

Bell, Alannah

Institution: *VA - University of Virginia*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Alannah Bell

Abstract Name: **Nassau Street: A Case Study on the Housing Crisis, Floodplain Maps, and Environmental Justice**

Urbanizing regions across the United States face two major crises: housing and climate. The 'Nassau Street: A Case Study on the Housing Crisis, Floodplain Maps, and Environmental Justice' project focuses on the area of and surrounding Nassau Street, a river-adjacent street that is located in the predominantly low-middle income neighborhood of Belmont in Charlottesville, Virginia. The project seeks to analyze the intersectionality of both the housing and climate crises through the lens of a development ethics case in combination with applied anthropological techniques to produce community-based policy proposals.The story of Nassau Street begins with a case of unethical engineering and development practice that was perpetuated by the city's panic to resolve the housing crisis, authoritative disregard for climate change, and a violated partnership between the City of Charlottesville and the Federal Emergency Management Agency (FEMA). By working with the Nassau Street and greater Charlottesville communities, I engage with and better understand resident opinions, concerns, and experiences as they relate to the case study of interest. Through this, I consider how these local knowledge pools fit into a policy framework to address the case study issues and to prevent their future occurrences.The project collects, analyzes, digitizes, and reorganizes archival data related to Nassau Street and Charlottesville from regional libraries to reconstruct the extent of past flood events, project the severity of future climate-induced flooding, and to understand the fluxes of population demographics. Additionally, semi-structured interviews and focus groups are conducted to gain valuable, local insight and to ensure that community needs are met throughout the project process. The ultimate objective of the project is to provide a policy-based template that any locality may use to empower an active citizenry, protect communities from unethical development, prevent the occurrence of environmental injustice, and repair the relationship between localities and FEMA.

Bellah, Lola

Institution: *SC - Coastal Carolina University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Lola Bellah

Abstract Name: **Female Resistance in the Biopic: Three Case Studies**

A common thread has permeated biopics about female whistleblowers as the genre has evolved over time: the lead actors often have established reputations in the romantic comedy genre. Casting in three such biopics makes this trend clear: Sally Field in Norma Rae (1979), Meryl Streep in Silkwood (1983), and Julia Roberts in Erin Brockovich (2000). All three biopics focus on antinomians, the term being used in a secular sense to refer to figures who rebel against the status quo despite the potential consequences. In these cases, subjects work to expose large corporations taking advantage of their workers. Without casting traditionally ingenuous, likable actors as the leads, the films' creators run the risk of audiences viewing the leads as overly abrasive. In all three case studies, female whistleblowers are "softened" through casting. In Norma Rae, the real Crystal Lee Sutton's personality is softened through Field's traditional femininity. In Silkwood, Streep's own charisma draws the audience to an otherwise less likable activist character. And in Erin Brockovich, the real-life Erin's brashness is made palatable through Roberts herself. This style of casting panders for box-office success, which does attract larger audiences to learn of these women's stories and success protecting the "little guys." However, no matter the actors' high-quality performances, this inherent character-softening still permeates the viewers' subconscious associations with the actors, devaluing the real-life whistleblowers' struggles and accomplishments against the Hollywood system's status quo. Ultimately, Sutton, Silkwood, and Brockovich (who, in reality, cared more about doing the right thing despite how it may hurt them than about others' perception of their likeability) are separated from their fictional counterparts through the choice of actors deeply associated with typical Hollywood feminine charisma, softening not only the women portrayed, but also the scope of their accomplishments.

Bello, Noah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Megan Patterson,
Ellen Mahaffy,
Mari Whiteford

Abstract Name: **Queer Monstrosity**

In Fall 2022, 18 students enrolled in an honor's course A Queer Lens, Representation Art, Photography and Film. Like the idea of queer theory itself, students were given the opportunity to dismantle the traditional assumptions about gender, sex, sexuality, heteronormativity, and more through a creative project. With the given prompt,create your own queer monster, each student could sculpt, draw or paint their concept. Students then applied their queer optic (Gopinath) of monster theory, queer artistic practices, and queer theory to realize their own aestheticThe creative process started with a rough sketch, pitched concepts to the class, and then consultationswith a monster making expert. If creating a sculpture then an armature was crafted for paper mâché clay application. Students will then take another week to finalize a queer monster by painting, dressing, adorning with different materials and textures.Within monster theory, beasts, demons, freaks, and fiends are symbolic expressions of cultural unease that pervade a society and shape its collective behavior. This aligns with queer theory because of the monsterization of queer characters in film and the queer coded monsters and ideasthatare usually prevalent in horror films. Taking the idea of monstrosity and refiguring it into a work of art, depictingand evokingsome sort of feeling (horror, longing, confusion, desire, etc.) was a goal for each student. In gathering all 18 works together we see the different interpretations of monstrosity. With this proposed exhibition, we envisioned monstrosity as a whole other level of what it means to be queer. Thus, each student will include a statement about their piece that explains their understanding of queer monstrosity.Final critique is taking place Decemeber 22nd, 2022. Images will be posted to Ellen Mahaffy's website shortly afterwords. (www.redcatphoto.com)

Beltran, Anthony

Institution: *FL - Florida Atlantic University*

Discipline: **Economics**

Author/Contributors:
Anthony Beltran

Abstract Name: **Purchasing Intent on Electric Vehicles**

With electric vehicles projected to make up 13% of all new car sales in 2022, they are said to be a revolutionary step in transitioning to a greener planet with less dependence on fossil fuels.However, there has been heavy debate on electric vehicles and whether they benefit the environment and the overall vehicle market. The purpose in creating my study is to understand the opinions of the customers, determining the state of the economy. The purpose of my paper is to see people's views on owning an electric vehicle and their reasoning for it. To do so, a survey was written through Survey Monkey, collected using Amazon MTurk with a total of 197 responses. The results show that 49% of those between 18 and 34 years old plan to purchase an electric vehicle in the next 5 years, while 42% of those 35-49 and 48% of those 50+ plan on purchasing in the next five years.Furthermore 67.2% of those between 18 and 34 years old drive electric vehicles for environmental purposes, 45.8 % of those between 35 and 49 years old drive them for environmental purposes, and 59.3% of those between 50+ drive them for environmental purposes. Understanding the driving factors of why people choose to purchase an electric vehicle is why we must determine if it could be a positive or negative trend to the saturation within the market, potentially impacting marketers, advertisers, and politicians on the forthcoming market saturation of electric vehicles.

Bendea, Mihai

Institution: *TX - The University of Texas at Dallas*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mihai Bendea
Justin Abbott
Stuart Cogan
Thomas Smith
Jeffrey Capadona
Joseph Pancrazio
Yupeng Wu,
Crystal Engineer,
Ana Hernandez-Reynoso

Abstract Name: **Temporal Assessment of Detection Threshold Stability in Rodent Somatosensory Cortex Via Microelectrode Array Stimulation During Novel Operant Conditioning Paradigm**

Intracortical microelectrode arrays (MEAs) are capable of evoking various percepts through intracortical microstimulation (ICMS) in patients with paralysis and sensory loss. Our lab has developed a novel positive-reinforcement operant conditioning behavioral paradigm for assessing somatosensation in animal models without the use of pain aversion to quantify rodent perception thresholds in response to ICMS. Our goal is to develop a highly reproducible protocol for investigating the reliability of chronic ICMS and MEA longevity in vivo. All procedures were approved by the University of Texas at Dallas IACUC. Sprague Dawley rats were habituated and evaluated for proficiency in a nose-poking task prior to randomized assignment to either receive an implanted Microprobes platinum-iridium MEA device targeting the S1FL, or no implant, acting as a positive control group. The ICMS group was trained in a custom operant conditioning apparatus to nose-poke following an ICMS square biphasic pulse wave to receive a sugar pellet within a specified response window. After training, five baseline task-proficiency sessions were recorded followed by a behavioral task incorporating a randomized and adaptive up-down staircase psychophysical procedure used to determine detection thresholds of stimulation-evoked somatosensory percepts. ICMS parameters were as follows: charge balanced, biphasic waveform, 320 Hz frequency, 200 µs pulse width, 40 µs interphase interval, 650 ms train duration, 0-3 nC/phase charge (0-15 µA). The control group paralleled the same behavioral tasks with a 500 ms 6 kHz auditory tone that varied in amplitude for threshold detection sessions. A quantal stimulation dose-response curve with normalized responses and a variable slope was used to evaluate each groups' threshold detection progression. The results suggest that this paradigm can be used to assess the effects and performance of microelectrode array devices on chronic intracortical microstimulation sensitivity in the somatosensory cortex validating this paradigm as a tool for future perception detection studies.

Bendel, Katharine

Institution: *MN - St. Catherine University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Katharine Bendel,
Ted Pappenfus,
Daron Janzen

Abstract Name: **Access to Unique Products From a Mechanochemical Synthesis**

Mechanochemistry is a synthetic method that utilizes grinding to initiate a chemical reaction by combining solid reactants, rather than dissolving them in solution. Advantages of this method include the absence of wasteful solvent and reduction in chemical hazards, which are key principles of Green Chemistry. This project focused on another unique feature of mechanochemistry, the possibility of accessing different products than those produced from solution synthetic methods. A Knoevenagel condensation reaction with four possible product structures was conducted using both solution and mechanochemical methods. Structural differences in the products obtained from the solution and mechanochemical reactions were characterized using nuclear magnetic resonance spectroscopy, and differences in bond vibrations were observed using infrared spectroscopy. Quantum mechanical calculations involving geometry optimizations were performed to understand the relative stabilities of the four possible product structures from this reaction. The single crystal x-ray structure of the product was obtained from the solution reaction method. Several mechanochemical variables were also investigated to determine the effect on the product(s) formed, including grinding time, amount of catalyst used, and stoichiometric ratio of reactants. The combined results of our experimental and computational studies provided strong evidence that mechanochemical methods produce different product structures than solution methods for this condensation reaction. This study demonstrates that mechanochemistry has important future implications in potential synthesis of products where either no solution method is currently available, or existing methods provide undesired products.

Benedict, Kathryn

Institution: *NC - North Carolina State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Kathryn Benedict *Sandra Stangeland-Molo* *Jacqueline Cole*

Abstract Name: **Characterization of Porous, Mineralized Collagen-Chitosan Scaffolds for use in a Bone-On-Chip Platform**

A primary component of bone-on-chip platforms is the development of a scaffold that mimics the cancellous bone microenvironment and provides support for cells. Cancellous bone is primarily composed of type I collagen and hydroxyapatite mineral. Porosity and protein mineralization are important components of cancellous bone, though previous studies primarily focused only on one. To address both properties, scaffolds were freeze-dried with both collagen and chitosan in weight % ratios of 10:0, 8:2, and 6:4. They were then carbodiimide-crosslinked for 8 hours to retain the porous structure, using 98% ethanol as solvent to prevent protein dissolution, and mineralized in either modified simulated body fluid (mSBF) or polymer-induced liquid precursor (PILP). Various mineralized scaffold properties were characterized with thermogravimetric analysis (TGA), Fourier-transform infrared spectroscopy (FTIR), energy dispersive spectroscopy (EDS), and scanning electron microscopy (SEM). TGA: Scaffolds had average mineral deposition of 20-40% in both mineralizing solutions, compared to 65% on average for bone, with PILP trending higher for 8:2 and 6:4 formulations. FTIR: Spectra of all scaffolds exhibited characteristic peaks for collagen (Amides I and II), and the C-H peak for chitosan was present for 8:2 and 6:4 formulations. EDS: Scaffolds were composed mainly of carbon, sodium, chloride, calcium, and phosphorus. Average Ca/P ratios, an indicator of bone apatite quality, were calculated for the different formulations and compared with a benchmark ratio of 1.67 for bone. Ratios were 1.00-2.38 for the different formulations, with mSBF-treated scaffolds having ratios above 2.00. SEM: Scaffold porosity ranged 40-55%; further optimization will hopefully increase porosity to the typical range of 70-80%. Next steps will be to finalize characterization and perform biocompatibility assays with osteoblast-lineage cells to assess the best formulation for the platform, which will be used to study changes in the bone microenvironment that may contribute to fractures following stroke.

Benjamin, Micah

Institution: *MI - Northern Michigan University*

Discipline: **Education**

Author/Contributors:
Micah Benjamin,
Dawn Lundin

Abstract Name: **COVID-19 VS. Higher Education: Understanding the Exigencies Through Students' Perspectives in Online Learning**

The Coronavirus Disease 2019 (COVID-19) pandemic has impacted how students learn. The sudden shift to the emergency remote learning format during the COVID-19 pandemic has impacted students' mental health, well-being, and educational resources. A survey conducted by Active Minds concluded that 38% of students reported difficulty focusing on their academics, and 74% found it challenging to stick to a regimen (COVID-19: Student Survey, 2021). The COVID-19 pandemic has influenced higher education to develop a framework that spans several learning formats. This study intends to highlight resources that aid students when academic courses in higher education are transformed from face-to-face to emergency remote learning, online learning, orhybrid learning format. The findings of this study will enhance academic faculty members' understanding of which course components are essential when navigating a pandemic in higher education. Students enrolled in AH 202: Nutrition for Health Care Professionals II completed a voluntary questionnaire regarding Northern Michigan University courses being converted to emergency remote online learning in the winter of 2020. Voluntary questionnaires were provided to students during the winter 2020, summer 2020, fall 2020, winter 2021, summer 2021, and winter 2022 semesters. In addition, students were also presented with a voluntary follow-up questionnaire at the end of each semester. The student responses from both; initial and follow-up surveys were compared to analyze the anticipated and actual challenges students experienced during emergency remote learning, online learning, and hybrid learning.With the results presenting an understanding of the limitations of the COVID-19 pandemic, this research study will provide knowledge and new perspectives from the student's point of view in higher education.

Benn, Amara

Institution: *WI - University of Wisconsin-Madison*

Discipline: Biology

Author/Contributors:
Amara Benn *Virginia Pszczolkowski* *Leo Coelho Ribeiro,*
Kathryn Ruh *Sebastian I Arriola Apelo*

Abstract Name: **The Role of Energy Source on Mammary Gland Utilization of Plasma Amino Acids**

Animal agriculture is currently unsustainable with excess amounts of nitrogen polluting the environment, posing a threat to planetary and human health. Currently, an estimated 75% of the nitrogen consumed by a dairy cow is excreted in manure. The Arriola Apelo lab investigates nutritional strategies to stimulate signaling pathways that regulate milk protein synthesis directing nitrogen towards milk production, therefore reducing the amount of nitrogen waste entering the environment. The mTORC1 pathway shows promise as it coordinates nutrient and environmental cues to stimulate cellular anabolic processes, like protein and fat synthesis. Previously, our lab has demonstrated that insulin and amino acids (AA) synergistically stimulate mammary mTORC1 activity. We hypothesized that glucogenic energy, by stimulating insulin secretion, potentiate AA activation of mammary mTORC1 activity, thus increasing sequestration of AA for milk protein synthesis. To test our hypothesis, and as part of a larger study, 20 peak-lactation Holstein cows were used in a 4x4 repeated Latin square design with four 28-d periods and four treatments arranged as a 2x2 factorial. The two treatment factors were energy source: glucogenic (GE) or ketogenic (KE) and total metabolizable AA: 10% deficient (DAA) or sufficient (BAA). Blood samples were collected from coccygeal vessels (representing artery) and subcutaneous abdominal (mammary) vein at 6 timepoints during the last 2 days of each period. Plasma was isolated by centrifugations and mixed with isotopically labeled AA as internal standards for AA analysis by liquid chromatography-mass spectrometry. Mammary blood flow was calculated based on the Fick principle, using Phe+Tyr as non-metabolizable markers. Mammary extraction efficiency, uptake, and uptake to milk output ratio were calculated. Statistical analysis was performed in RStudio. Results from this study will contribute to a more sustainable dairy industry.

Benner, Brittany

Institution: *GA - Georgia College and State University*

Discipline: Biology

Author/Contributors:
Alexandra Furney,
Brittany Benner,
Jin Yeong Kim,
Arnab Sengupta

Abstract Name: **Role of Regulatory mRNA Structures in the Expression of Cancer-Related Genes**

Messenger RNA (mRNA) translation, the synthesis of proteins based on genetic code, is an essential process in gene expression. Translation is often inhibited when cells are under stress, but there are mechanisms that allow certain genes to bypass stress-induced inhibition. Prior studies have identified a list of genes that disregard stress signals to continue mRNA translation using regulatory RNA structures to hijack the translational machinery. We hypothesize that stress-signals must alter the RNA structure to trigger structure-mediated mRNA translation. Our target genes include oncogenes HIF1A, FGF2, and tumor-suppressor gene TP53. We aim to amplify regulatory mRNA regions previously reported for each gene from A549 lung carcinoma cell lines. Next, we will build and compare structure models for regulatory regions under three conditions: (a) cell-free, (b) in-cell unstressed, and (c) in-cell stressed. For structure modeling we use SHAPE-MaP, a chemical-probing strategy analyzed using next-generation sequencing (NGS). We have successfully extracted, probed, and amplified the target regions using gene-specific primers, reverse transcription (RT), and polymerase chain reaction (PCR). We analyzed PCR products using gel electrophoresis. Here we describe our experimental workflow along with data from NGS library preparation. Applying NGS using the Illumina MiSeq platform on target mRNAs, we will build RNA secondary structures with Shapemapper2 and SuperFold software packages. Our long-term goal is to describe structure-based mechanisms by which translation of cancer-causing mRNAs can be blocked, and how translation in cancer-fighting mRNAs can be reengaged.

Bennett, Megan

Institution: ***FL - Nova Southeastern University***

Discipline: **Mathematics**

Author/Contributors:
Megan Bennett

Abstract Name: **Minimum Blockers of 123-Avoiding Permutation Matrices**

A blocker of n × n permutation matrices is a set of positions in an n × nmatrix that intersects each n × n permutation matrix at least once. A blocker is minimum if removing any position makes it no longer a blocker. The Hankel cyclic decomposition implies that each minimum blocker of 123-avoiding permutation matrices must have a cardinality of at least n, and minimum blockers containing exactly n positions are called minimal blockers. The well-known Frobenius-K¨onig theorem characterizes the minimal blockers of permutation matrices: any r × s submatrix is a minimal blocker of all permutation matrices if and only if r + s = n + 1.A permutation matrix A is 123-avoiding if it does not contain the 3 × 3 identity matrix as a submatrix. Recently, Brualdi and Cao characterized the minimal blockers of 123-avoiding permutation matrices. They showed that all minimal blockers of 123-avoiding permutation matrices must contain either the (1, n) or (n, 1) position and can be obtained by shifting some positions from an L-shaped blocker. We continue their study by defining flag-shaped blockers, which need not contain the (1, n) nor (n, 1) position and may have cardinality greater than n. We show that all flag-shaped blockers are minimum and all minimal blockers of 123-avoiding permutation matrices are special cases of flag-shaped blocker.

Benson, Brittany

Institution: ***IL - North Central College***

Discipline: **Sociology**

Author/Contributors:
Brittany Benson

Abstract Name: **Neighborhood Effects: An Ethnographic Study of the South Loop, Pilsen, and Austin Neighborhoods in Chicago**

Place is more than just the physicality or location of something. It is also a product of buildings, streets, the people who surround it and occupy that space. Place cannot exist without the actors and the actors cannot exist without the place. Both play an essential function in understanding neighborhood effects and the necessary equipment for living. It is important that people develop the necessary knowledge and equipment for living to function and make the best of their daily interactions that take place in society. Chicago is composed of many different neighborhoods; however, each neighborhood poses different challenges with respect to the equipment for living or the practical routines individuals need to figure out and make their way through each community. This study draws upon first-hand observations, demographic analysis, and interviews to understand and compare these different routines in the South Loop, Pilsen, and Austin community areas of Chicago. Through this study it was found that these communities vary greatly in terms of access to clean and healthy food, relationship with the police and the community,diversity, homelessness, and access to everyday resources. These findings help to understand the importance of building a relationship with the community around you and why it is important for people to understand the daily equipment for living in these neighborhoods in Chicago.

Benson, Brooke

Institution: *TN - Trevecca Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Taylor Rickey,
Brooke Benson

Abstract Name: **Mindfulness Skills, Emotional Regulation, and Coping Mechanisms as Predictors of Academic Success and Wellbeing**

The goal of this research study was to determine the possible relationship between emotion regulation, coping, and three facets of mindfulness (acting with awareness, nonreactivity, and observing) in predicting perceived academic success and overall wellbeing. “Wellbeing" is a term that is often rated according to someone’s own perception of their mental and physical states. Academic success is determined by the individual’s own perception of what success should look like. Like Finkelstein-Fox et al. (2018) reported, “Understanding students’ intrapersonal resources that promote resilience and protect psychological well-being as they transition from high school to undergraduate life may provide useful directions for campus-based counseling interventions,” (2018, p. 639). Acquiring knowledge surrounding these variables and their relationship to individuals’ wellbeing could create pathways to decrease mental health issues in universities everywhere. The current study was conducted at a small, liberal arts university in the southeast. The Five Facet Mindfulness Questionnaire (FFMQ), a shortened form of the 60-item COPE scale called the Brief-COPE, The Emotion Regulation Questionnaire (ERQ), The Satisfaction with Life Scale (SWLS), and the Academic Self-Perception subscale were administered to 145 undergraduate students with a mean age of 19.52. The results were analyzed using a multiple regression analysis through SPSS. The results of this study revealed that acting with awareness was an overall predictor of overall wellbeing. A second multiple regression analysis revealed that the two variables of coping and acting with awareness were significant predictors of an individual's perception of their academic success. Emotion regulation and two facets of mindfulness (nonreactivity and observing) failed to significantly predict perceived academic success and overall wellbeing. Implications, limitations, and recommendations for future research were addressed.

Benson, Gabriel

Institution: *GA - University of West Georgia*

Discipline: Political Science

Author/Contributors:
Gabriel Benson

Abstract Name: **The Mental Health Disparity Facing Sixty Years or Older Georgia Veterans in Rural Communities**

The VA predicts in the next two years, 77% of rural counties will have a shortage of mental healthcare providers. A majority of military recruitment is committed in these areas and in Georgia there are 630,000 military veterans, of those veterans 68.2 % served during or before the Gulf War. An increase in internet access is a must if we are to ever address the mental health crisis facing veterans living in rural Georgia. 29% of veterans in rural areas have reported ever receiving care for mental illness, while 22% of veterans in rural areas report suffering from mental illness. For perspective, 45% of veterans living in urban areas have received treatment. When the numbers are considered it becomes clear that rural veterans in America are at a disadvantage and in Georgia where 136 rural hospitals have closed, their resources will worsen. This raises the question: How can Georgia ensure that veterans aged sixty or older living in rural communities can receive sufficient evaluation and prescription of mental health medication? The answer is through an increase in internet access in rural Georgia, allowing for veterans to experience an increase in telehealth availability and quality.

Berg, Joe

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Joe Berg,
Adrienne Leuck,
Kaitlin Peterson,
Kimberly Sanchez,
Madeline Wood,
Michael Ziegler

Abstract Name: Smartphone Use on Well Being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphone use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitive, and social well-being of individuals across the generations. Previous research tendedto focus on one aspect or another of well-being, for example sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are impacted by Smartphone use.

Berger, Calista

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Biology

Author/Contributors:
Calista Berger

Abstract Name: Adverse Childhood Experiences (ACES) and the Risk of Intimate Partner Violence (IPV)

The purpose of my research is to take a look at how trauma may or may not have an impact on couple relationships. This research is important due to the fact that one's previous negative and/or traumatic experiences have the ability to significantly impact their behavior and responses with their partner. Previous research has shown that one's previous occurrences do tend to influence one's trust, security, and anxiety in relationships. The target population for my extended literature review is for individuals who may be in environments with either perpetrators and/or survivors of IPV. The population also has to have had a previous relationship with this criteria or be in a current relationship with this criteria.If I were to conduct a study, amethod of evaluation would be outcome-based, in which I would have two different scales in the survey. One would be the ACEs test to evaluate the participant's adverse childhood experiences. The other would be the Conflict Tactics Scale that will evaluate different aspects of violence in their relationship. Since I am conducting an extended literature review, it will be broken down into themes such as: geographical components, diversity aspects, gender disparities, and other factors that are embedded in a literature review. I am confident that my findings from the extended literature review will show a strong correlation between these two aspects. My extended literature review will contribute to the field of knowledge by acknowledging the significant impact of negative childhood experiences. By seeing how it can affect couple relationships, we may be able to pinpoint certain relationship aspects and know how to improve the overall quality of relationships.

Berkowitz, Lindsay

Institution: *NC - Elon University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lindsay Berkowitz

Abstract Name: **When Language Moves What Matters: Effects of Linguistic Framing on Endorsement of Black Lives Matter Tenets**

The Black Lives Matter (BLM) movement holds a mission to fight white supremacy and stop systematic, racially-motivated violence targeted towards Black communities (Black Lives Matter, 2013). Although the majority of U.S. adults in September 2021 reported that they support BLM, it can be helpful to learn more about why some people do not support the cause and factors that might alter support (Horowitz, 2021). One consideration is valence in linguistic framing, or the positive or negative feelings that certain words or phrases may automatically evoke (Avineri & Waygood, 2013). Framing is a low-effort way to affect attitudes without increasing knowledge and without need of rehearsal (Bizer & Petty, 2005). This study measured frame valence and how it shifts in independent versus combinatorial contexts by comparing the valence of statements on the BLM website's About page to the valence of the individual words out of context. Additionally, this study will see if statement and sub-phrase valence are related to ratings of support for the information in the statement or subphrase. In part one, the individual words from the statements were tested out of context to find the independent valences – positive, neutral, or negative. In part two, the full statements, as well as sub-phrase excerpts, were tested for valence as well as degree of support for the claim. Five-point Likert scales were used for both valence ratings (strongly negative to strongly positive) and support ratings (definitely not to definitely). Data collection is underway and results will be analyzed soon. The results of this study will hopefully have a positive impact on the Black Lives Matter organization by adding to our understanding of factors that can increase overall support.

Berry, Billie

Institution: *MN - Hamline University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Billie Berry

Abstract Name: **A Comparative Analysis of the UK & US Police Forces and How the Media Shapes Public Perception**

This research investigated the public's perception of the police in the United Kingdom. Data is drawn from various newspapers published in London during the months of June and July 2022. Data showed that UK police are rarely included in the newspaper but when they are they are generally cast in a favorable light. Adversely other countries police forces are depicted in a negative perspective with most of their reporting aimed particularly at the US. Additionally, data was gathered from informal conversations with various members of the public living in or visiting England. I was able to gain the perspectives of seven persons of English background, two from Ireland, two from Sweden, one from France and a group of three police officers in London. Results showed that the UK police force are contending with issues of racism and xenophobia but they are typically regarded positively by the public. During the course of my research, I discovered that there are several startling laws surrounding the Internet, its dissemination of information, and the freedom of speech in the UK. The differences in the attitudes of the UK citizens regarding the government's involvement to withhold information from the public and impose limitations on what the citizens are allowed to say and share is a stark contrast to the attitudes of the average American citizen. A major finding in this study is that the British public and police perspective align around the belief that the U.S. could learn from the UK regarding confiscation of firearms. The citizens of the UK genuinely believe that if American citizens would just voluntarily turn over all of their firearms, then our citizens would have nothing to worry about when it comes to the police even when confronted with evidence of police brutality in their own country that bans guns.

Berry, Dana

Institution: *TX - Tarleton State University*

Discipline: **Social Work**

Author/Contributors:
Dana Berry *Lexie Dehaven* *Stephanie Rudzinski*
Ebony Lang

Abstract Name: **Skill Assessment of Caregivers who Serve People with Intellectual and Developmental Disabilities**

This quantitative study assesses the knowledge and skill of caregivers who serve people with Intellectual and Developmental Disabilities (IDD) and explores the aspects of training they received prior and during their time serving the population. In order to test the skill of caregivers, studentresearchers created a survey with 15 qualitative and quantitative questions. There are 4 demographic questions that ask about age, gender, and ethnicity; and there are 11 questions that ask about prior experience, personal opinions of their training, and certifications. The collected data was received by sending out an electronic version of the survey to caregivers for people with IDD. Using 75 participants, this research aims to see how effective training is when used in practice. The research allows student researchers to explore solutions to maximize effectiveness. Once the data was received, it was entered into an excel codingsheet and copied into SPSS. This software provided student researchers with insight about their data based on correlations between prior training, certification and years of experience compared to their comfort level as caregivers. Student researchers used quantitative analysis such as Measures of Central Tendency, Chi-Square tests, and Correlations to find any statistical significance. The nonparametric testing that wasconducted for the research is the goodness of fit method. Student researchers thenran correlations between the variables of caregivers' age, gender, and education level.Overall, results indicate that participants felt the training they receive was beneficial, positive, and thorough (40%, n=30). The results also indicated that most of the participants had a high comfort level when it comes to caring for individuals with IDD (84%, n=63). The qualitative data is observed from open-ended questions. Student researchers intend to use these results to change training to maximize skillset and improve living conditions for people living with Intellectual and Developmental Disabilities.

Berry, Dylan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Calla Dexheimer *Giulia Mattana* *Dylan Berry*

Abstract Name: **A Computer-Based Model to Capture Gastric Electrophysiology Through Bio-Impedance Analysis**

The ability to monitor the bioelectrical activity of the gastrointestinal tract, in a non-invasive manner is essential for the diagnosis and management of functional gastrointestinal disorders. Electrical bio-impedance (Bio-Z) analysis is a promising method to acquire a wide range of human electrophysiological activities, through wearable electrodes. The Bio-Z sensing system consists of a four-electrode configuration on the body surface in which the two outer electrodes deliver a sinusoidal excitation signal transcutaneously, and the two inner electrodes acquire a differential potential which will be conditioned, processed, and mapped to the electrophysiology of interest.To this end, we developed a computer-based model of the human gastric system in COMSOL Multiphysics, a simulation platform based on the finite element method. Through the model, we simulated the Bio-Z analysis to capture the gastric electrophysiology, through the body surface. The objective of the project is to simulate the penetration depth of the Bio-Z analysis as a function of frequency and find the optimum frequency for the clinical data collection on human subjects. We developed the model of the abdomen through four layers of skin, fat, muscle, and peritoneum. Besides, we developed the model of the gastrointestinal tract through four layers of serosa, muscularis, submucosa, and mucosa. The model of four AgCl electrodes was added to the model of biological layers, too. The frequency-dependent permittivity and conductivity parameters were assigned to each biological layer for the simulation at each Bio-Z frequency. In COMSOL, we generated the electric fields resulting from the applied sinusoidal excitation signals at various frequencies in the range of 10 kHz to 250 kHz to the stomach, transcutaneously. Then, we plotted the power spectrums of the electric fields and compared them at the penetration level of the gastric tract.

Berthiaume, Anna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Anna Berthiaume,
Bianca Spoerl

Abstract Name: Investigation of Cancer Biomarkers Using SERS

Surface Enhanced Raman spectroscopy (SERS) can be used to detect changes in the composition of human saliva that may indicate the presence of cancer biomarkers. Cancer is a prevalent disease that affects many people. By using SERS with human saliva, a painless and possibly more effective way to detect cancer can be created. Like blood, saliva can show changes in proteins and concentrations of certain molecules that occur due to cancer. The method that our group will focus on is SERS which is an extremely sensitive spectrophotometric method. This is necessary when using saliva samples as many analytes are in very low concentrations. Our group is still in the preliminary stages of using the Raman spectrophotometer and optimizing SERS conditions. Moving forward, our group hopes to successfully run treated saliva samples on the Raman.

Besst, Anika

Institution: *MN - Hamline University*

Discipline: Theatre and Dance

Author/Contributors:
Anika Besst

Abstract Name: Journalism Meets Performance: An Anthology of Ferocious Healing

Storytelling is the foundation for the fields of journalism and performance. While journalism is for truth-telling and performance offers empathy-building, the two can be merged to tell stories that leverage the strengths of both fields. A literature review and interviews with professionals supported the convergence of these fields to create more spaces to share and hear stories, including those less commonly sought after by storytellers and consumers of broadly marketed mainstream media. Based on this previous research, I produced a template that offers advice to social movements and groups when considering and developing work that combines journalism and performance. This template considers the topic, available time, content acquisition, storytelling method, and intended audience. To test this template, I created a performance, An Anthology of Ferocious Healing, which explored what healing and peace mean to young adults in a world that can be simultaneously complicated, frustrating, hopeless, beautiful, and joyous. These stories of respite were collected through interviews with individuals aged 18 to 25 years old in Minnesota, as well as adults in direct contact with the individuals, such as educators and parents. I included the unedited content that I gathered from these interviews in a resulting performance through various storytelling techniques. The performance was written in a gallery format that provided the audience with a self-paced, multimedia, and multisensory experience. This work blended practices of journalism, performance, theatre, ethnography, oral history, creative writing, and social justice to experiment with and expand the ways stories are told.

Best, Megan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Gabrielle Proffitt,
Megan Best

Abstract Name: Virtual Stories to Support Undergraduate Students in Developing Cultural Awareness

The Human Library project is working to connect "human books" (people with unique experiences and backgrounds) to "readers" (people who want to learn and grow) to challenge what they know. Inspired by events held by The Human Library, this research aims to create an opportunity for undergraduate communication sciences and disorders students to grow and learn from those whose backgrounds differ from their own and apply it to their professional development. In this research project, stories will be created and presented online by graduate students, alumni, or other professionals who self-identifyexperiences related to diversity in the field of communication sciences and disorders. These stories will create a virtual library for the undergraduate students enrolled in a senior-level course on serving diverse populations. Undergraduate students will choose to review and analyze a story, generating a shareable presentation for the class and a personal reflection on the experience. To measure the effectiveness of this project on diversifying student cultural perspectives, a survey based on the American Speech-Language-Hearing Association (ASHA) Cultural Competence Check-In: Self-Reflection, will be given to the students before and after the story analysis project. After that, change scores will be calculated for statistical significance. Reflections will be analyzed for general themes to further explain student learning. The results of this study will reveal whether this is an effective pedagogical method for diversifying student perspectives on culture within the scope of communication sciences and disorders.

Bethke, Kieran

Institution: ***MD - Salisbury University***

Discipline: History

Author/Contributors:
Kieran Bethke

Abstract Name: Papal Power vs. Secular Power: Renewed Interest in the Rule of Law in the Long Twelfth Century

Historians repeatedly trace the development of modern parliamentary democracy from Aristotle's Politics in the sixth century to Enlightenment thinkers like John Locke in the seventeenth century. Except for the Magna Carta, the long twelfth century is mistakenly considered a part of a "Dark Age" for democracy. The "Dark Ages" is a persistent misnomer created by Renaissance scholars to exaggerate the "light" of the Renaissance compared to the perceived "darkness" of the Middle Ages. However, many historians have debunked this assumption and proved the long twelfth century is rich with legal and political developments crucial to the structure and values of modern parliamentary democracy. When examining the medieval origins of democratic principles, many historians have overlooked the influence of the Roman Catholic Church in the rise of proto-democratic ideas and institutions in Western Europe. Some historians have emphasized the influence of ecclesiastical law as the foundation for these ideas but have not examined how ecclesiastical ideas were adopted by secular political communities. I will argue that secular-religious conflicts in the long twelfth century, starting with the Investiture Controversy, stimulated renewed interest in proto-democratic norms, such as the rule of law and political accountability. For instance, arguments in the long twelfth century over the independence of the church, especially church elections and courts, fueled the supporters of papal supremacy to insist on the rule of law and political accountability. Bishop John of Salisbury's Policraticus (1159) and Archbishop Stephen Langton's Magna Carta (1215) were two of the first influential examples of the rule of law and political accountability articulated in the Middle Ages. Additionally, advocates of secular supremacy, specifically Holy Roman Emperor Henry IV (1084-1105), inadvertently argued against tyranny, albeit, referring to popes.

Bezanovski, Alexandar

Institution: *IL - University of Chicago*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alexandar Bezanovski,
Naoum Issa

Abstract Name: **Developing a Semiology Expert System for Pre-Surgical Localization of Seizures**

Introduction: Epilepsy is a neurological disorder caused by abnormal electrical brain activity and impacts 3.4 million people nationwide. Seizures have serious implications for patients and can cause a loss of control of movement, sensation, and awareness, and seizures can sometimes lead to death. When anti-seizure medications are insufficient, surgical resection of the seizure-causing regions of the brain is the standard of care. However, the techniques that localize seizure onset can be imprecise. Seizure semiology, which is the clinical progression of seizure symptoms, is initially used to build a testable hypothesis of where in the brain seizures originate. This hypothesis is then tested through imaging and electrographic studies. However, the usefulness of seizure semiology depends on the experience of the practitioner and varies across epilepsy centers. We have expanded on a computer expert system that helps identify which regions of the brain are likely to produce specific seizure semiologies.MethodsThe system is coded using MATLAB. Elements and timing of a patient's seizure semiology are inputs, and the output consists of images showing brain regions involved in the seizure. In the images, the timing of involvement is represented by the color of the brain region. The connection between seizure semiology and brain region was ascertained from literature review.System ValidationInitial validation consisted of comparing system output with expectations of an experienced epileptologist. Secondary validation tests planned include: 1) prospective comparison of maps produced by the expert system to maps produced by two epileptologists blinded to system output, 2) prospective comparison of seizure-freedom rates in patients in whom the earliest regions of involvement determined by the system were resected or to rates in patients in whom the regions were not resected. Surgical planning will not be based on the outputs of the expert system during validation.

Bhandary, Manya

Institution: *FL - University of South Florida*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Manya Bhandary,
Amanda Sales Conniff,
Kaitlyn Miranda,
Loree Heller

Abstract Name: **Acute Effects of Intratumor DNA Electrotransfer**

Intratumor DNA electrotransfer (also known as electroporation) increases cell membrane permeability, allowing for transient and stable transfection of different cell types. This is characterized by changes in gene expression, which lends to its various immunotherapeutic effects. These are currently being explored via clinical trials in the United States. Specifically, this includes in vivo DNA electroporation to enhance the delivery of plasmid DNA in tumors. In this study, we aimed to determine the impact of intratumor electrotransfer of plasmid DNA on endogenous gene expression within a mouse model that is analogous to melanoma in humans. Results of the mouse studies were then confirmed by in vitro experiments conducted in B16-F10 mouse melanoma cells, allowing for a holistic view of its possible antitumor effects. Studies were conducted to determine the effects of plasmid DNA electrotransfer on mRNA expression after 4 hours via Affymetrix microarray analysis. The functional annotations tools on the DAVID v6.8 web server allowed for upregulated genes and their pathways to be identified. Further analysis revealed molecular functions involving cytoskeleton remodeling and pro-inflammatory signaling cascades. Cytoskeleton remodeling was validated through electrotransfer experiments at 4 hours, followed by F-actin staining via phalloidin. Inflammatory signaling was confirmed by the secretion of chemokines in electroporated cells and quantified via bead array analysis (MAGPIX System). These results indicate that pulse applications, with or without the introduction of DNA, can impact the therapeutic capabilities of DNA electrotransfer.

Bhaskara, Rick

Institution: *CA - California State University - San Bernardino*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Rick Bhaskara *Rey Zavala* *David Calderon*

Abstract Name: **Development of Photocrosslinking Click Chemistry Probes to Investigate the Function of Falcilysin, an Essential Malarial Metalloprotease**

Human malaria is a parasitic disease caused by 6 different Plasmodium species, leading to approximately 600,000 annual deaths. All clinical symptoms of the disease result from the intraerythrocytic development of the parasite. During this part of the life cycle, the parasite expresses an array of proteases to carry out many essential processes, such as host cell protein degradation, host cell invasion, and parasite protein export. Falcilysin (FLN) is an essential metalloprotease expressed by the parasite during intraerythrocytic infection, and it is known to function in host hemoglobin degradation and in processing of apicoplast-targeted parasite proteins. Recent studies have identified FLN as a target of the clinical antimalarial drug chloroquine, and it appears likely that the protease carries out additional roles in the cell.We are developing chemical tools to enable further investigation of FLN biology and its potential as a chemotherapeutic target. Here we report our work to synthesize and evaluate a series of piperazine-based hydroxamic acids as inhibitors of FLN. As well as incorporating photocrosslinking and click chemistry moieties into the scaffold. These studies will provide the rationale for the development of increasingly potent FLN inhibitors while identifying possible off-targets in the cell.This work builds upon our previous research by further optimizing the N1 position on the piperazine core. We synthesized and tested a series of 10+ compounds with diverse substituents which were installed using a range of synthetic methodologies. In a subset of compounds we incorporated diazirine and alkyne moieties to enable identification of cellular targets using a combination of photocrosslinking and click chemistry. All compounds were tested against cultured parasites and purified FLN, and we identified additional structural requirements for potent inhibition of FLN. Multiple inhibitors were discovered with similar or improved potency relative to our previous lead compounds.

Bhat, Namitha

Institution: *CA - University of California - Merced*

Discipline: Public Health

Author/Contributors:
Namitha Bhat *Karina Díaz Rios* *Lenna Ontai*
Mical Shilts

Abstract Name: **Community-Informed Process to Explore the Feasibility of Increasing Nutrition Education Capacity in a Rural Native American Community**

Health disparities with food insecurity and malnutrition affect many in rural California communities, especially in Native American youth, so increased access to services like health education may help to mitigate these issues. This project aims to determine the feasibility of connecting existing resources to improve nutrition-related preventive care capacity in these communities. A community participatory process was utilized to adapt traditional nutrition education offered by the Expanded Food and Nutrition Education Program to fit the cultural and contextual needs of the community. The classes were also adapted to be delivered remotely, via telehealth. The Tribal Board identified 3 community members to serve on the Community Advisory Board (CAB) for the project. Four monthly meetings were held with the CAB to discuss class logistics including telehealth delivery, schedule, space, equipment needs, and recipe selection. A partnership with the Outreach Department of the Indian Health Center was established to recruit participants into the classes. A community event was held to further explore recruitment and retention strategies with key informants within the community. A full series of 7 classes has been conducted to date. A total of 22 participants enrolled into the classes; 18 attended at least 4 classes. Dinner and take-home meal kits were provided each class. A local cafe prepared the meals for the classes and volunteers from the community helped with childcare. Participants provided feedback about the acceptability and appeal of the content and delivery mode by completing a survey at the end of each class and through a focus group interview after the last class of the series. Data is being compiled and organized using Excel spreadsheets for subsequent statistical and content analyses. Participants found the content useful to improve their eating practices at home and the telehealth format sufficiently engaging. A second series of classes will be conducted.

Bhattacharyay, Antara

Institution: *MN - Macalester College*

Discipline: **Music**

Author/Contributors:
Antara Bhattacharyay

Abstract Name: **Resistance through Music in West Bengals Dalit Community**

For thousands of years, the caste system has had a stronghold on Indian society. Excluded from the four main castes, the Dalit, often referred to as “outcastes” and “untouchables,” are positioned at the bottom of the social hierarchy. In West Bengal, India, many individuals, often coming from upper castes, perpetuate the myth of the state’s supposed “casteless society.” However, the caste-based discrimination experienced by Dalit individuals reveals a different story. Dalit resistance dates back to Bengal’s colonial period, with efforts continuing in the post-independence era. Amidst nationwide Dalit activism and growing literary efforts in the 1960s, the Bangla Dalit Literary Movement soon followed in 1976, producing literary and musical works that persist today. In this paper, I investigate the role of music in Dalit resistance and the importance of storytelling within Dalit music. I analyze musical examples from Smritikana Howlader (b. 1960), a prominent Bengali Dalit singer-songwriter, poet, and political activist affiliated with efforts of the Bangla Dalit Literary Movement. Howlader’s music falls into the broader genre of Bengali modern music, influenced by folk traditions, Laghu Shastriya Sangeet (light Indian classical), and anti-British protest music. Her music, emblematic of her experiences as a Dalit woman, is rooted in her training in Hindustani classical music, often featuring a range of composed and improvised portions. In addition to her musical style, I focus on her songs’ lyrical content and performances. I investigate how Howlader’s songs reflect uniquely Dalit experiences through the mode of musical storytelling. Additionally, I explore how her performance has fostered a stronger sense of Dalit identity and belonging within the Bengali Dalit community. Ultimately, I argue that these musical and performative aspects of Howlader’s art serve to combat dominant caste ideologies and Dalit erasure, furthering the resistance efforts of Bengali Dalits.

Bhattacharyya, Prajukti (Juk)

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: **FAN Abstract**

Author/Contributors:
Prajukti (juk) Bhattacharyya *Catherine Chan* *Frey Angela,*
Alena Kubatova *Jennifer Johanson* *Daphne Pedersen*
Rebecca Simmons *Shaina Mattingly* *Kanishka Marasinghe*
Gregory Vandeberg *Ryan Zerr*

Abstract Name: **Creative Ways of Broadening Participation in Undergraduate Research**

In this panel discussion, moderated by Prajukti (juk) Bhattacharyya (UW-Whitewater), three panelists will highlight innovative and effectivepractices for broadening participation in undergraduate research from the perspectives of faculty and administrators. These presentations will describe successful models of expanding participation from an administrator’s point of view, as well as highlight the roles of community engagement, mixed-age mentoring, and seminars designed to develop students’ identities as scholars.Catherine Chan from UW-Madison will highlight various barriers for expanding participation,and provide practical tools and effective collaboration strategies for overcoming those, based on her almost two decades of experience as a faculty mentor, grants administrator, program manager, and institutional administrator at different types of institutions.Angela Frey (co-author Jennifer Johanson) from Alverno College will showcase a mixed-age project where upper level students apply their STEM learnings to fulfill an unmet need of a community organization and disseminate their works through blog posts and presentations, while beginning students comment on those posts and personally reflect on the value of those projects conducted by upper-level projects. This presentation will focus on how the design of this project provides role models and leadership opportunities through community engagement, and ultimately leads to increased STEM identity and retention for students from underrepresented backgrounds.Alena Kubatova (co-authors Daphne Pedersen, Rebecca Simmons, Shaina Mattingly, Ka nishka Marasinghe, Gregory Vandeberg, Ryan Zerr) from University of North Dakota will describe a 1-credit science literacy seminar course paired with different curriculum-based research experiences (CURES) offered over the last three years. This presentation will focus on the impacts of these readings and discussions on beginning students on developing their STEM identities, interest in science topics, and formation of deep connections with faculty and peers.

Bhojanapalli, Rishika

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rishika Bhojanapalli,
James Bibb,
Alan Umfress,
Briana Machen

Abstract Name: **The Neurocognitive Effects of Chemotherapeutic Drugs**

Chemotherapeutic treatments targeting rapid cell growth and tumorigenesis have prolonged the lives of cancer patients. However, many treatments have toxic off-target effects on normal tissue and organ systems, including the brain. Patients report persistent cognitive impairments including memory loss, anxiety, and fogged perception following treatment. Currently, there are no treatments against chemotherapy induced cognitive decline, and the underlying mechanisms remain unknown. In this study, we assessed the effects of common breast cancer chemotherapeutics cyclophosphamide, methotrexate, and 5-Fluorouracil (CMF) on cognitive function and immune-cell infiltration in mice. Here, we observed CMF created behavioral alterations in brain region dependent memory, anxiety-like behaviors, sociability, and locomotor function. Additionally, CMF treatment leads to alterations in resident and infiltrating immune cell populations throughout the brain. These findings give way to a more complete understanding of the neurocognitive impairments induced by off-target chemotherapeutic toxicity and provide a crucial first step towards understanding and improving the quality of life for cancer treatment survivors.

Bhurtel, Ankita

Institution: *VA - George Mason University*

Discipline: Communication/Journalism

Author/Contributors:
Ankita Bhurtel

Abstract Name: **Dating Apps and Social Anxiety among Asian Undergraduate Students Post-COVID-19**

With the rise of dating apps, meeting new people has become increasingly convenient for young adults and individuals who prefer online communication. In this study, Social Compensation Theory will be used to analyze how socially anxious individuals try to compensate for their shortcomings in face-to-face interactions by using online dating apps. Previous research suggests there is an interdependent relationship between dating app usage and social anxiety. But this relationship is rarely examined within specific ethnic groups which unique cultural norms and practices may influence. This study investigates the relationship between social anxiety and dating app usage post-COVID-19 among Asian undergraduates at George Mason University. Participants (N = 200) will complete a survey through Qualtrics, a secure online survey platform. The survey will include a series of Likert-type questions. Social anxiety will be assessed using measures adapted from existing instruments such as the 18-item Social Phobia and Anxiety Index scale. Participants will be recruited through flyers and a campus engagement platform, George Mason University's Mason 360 portal. If the sample size is not fully achieved online, additional participants will be recruited on campus using in-person methods. Data collection will be completed by February 2023 and data analysis will be finalized by March 2023.

Bianco, Kristin

Institution: *MO - Missouri State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kristin Bianco

Abstract Name: **Rainwater Harvesting: A Lens into Sustainability Initiatives**

There have been numerous studies done researching the effectiveness of rainwater harvesting on a country's CO2 emissions and analyzing the best dimensions of collection barrels to optimize cost benefits, yet there has been minimal research on how a community can implement these types of programs to their constituents. Oftentimes, academia waits for research to "trickle down" to the general public. However, if there is no one to execute the findings of research, much of the work is for naught. Multiple cities have recently been attempting to reintroduce the practice of rainwater collection to conserve groundwater and instigate sustainability. The James River Basin Partnership, a nonprofit in southwest Missouri dedicated to protecting local waterways, has a program with the mission of promoting rainwater collection through a rain barrel rebate program funded through the state; however, they have been facing trouble in terms of participation. This paper proposes a study analyzing three different ways to introduce and market a rainwater harvesting system in three different neighborhoods in the JRPB region of Springfield, Missouri to maximize a nonprofit's abilities to best introduce sustainability initiatives into their community and follow through with the application of research done in academia. The works of Goldstein (2008) on water conservation have shown that social comparisons encourage residents to be more mindful of their water usage, and this proposed study will test this as well.

Biddle, Eulandria

Institution: *WI - Alverno College*

Discipline: FAN Abstract

Author/Contributors:
Jenna Coss *Eulandria Biddle* *Lauralee Guilbault*
Megan Krueger

Abstract Name: **Pipeline to Success through Research and Community Connections for Underrepresented Women in STEM Majors**

Alverno College is the first Hispanic serving institution in Wisconsin with programs aimed to increase the population of STEM majors from underrepresented communities. In 2011, a pipeline was created with the Girls' Academy of Science and Mathematics program (GA) where high school girls work with the Natural Sciences, Mathematics, and Technology division (NSMT) faculty on Friday nights to participate in STEM activities, which encourages them to apply for undergraduate STEM programs. Since 2018, NSMT has increased its capacity to provide STEM undergraduates with on-campus summer research opportunities. Traditionally, these programs are designed for upper level students; however, Alverno's program is open to students of all grade levels. The main goal is to increase student self-efficacy in the laboratory, connect scientific research to the local community, and increase persistence in STEM majors. Alverno and the Milwaukee Riverkeeper has established a partnership in efforts to make a community-based connection and assist in water analyses researched each summer. Beginning-level students conduct water sample collection, analyses, and hypothesis building using chemistry and biology methods over a six week program. Upper-level students conduct more advanced water chemistry analyses, microbiological, and molecular biology research over eight weeks. Students attend weekly laboratory meetings and professional development sessions to learn about STEM careers, research/internship opportunities, and receive academic advising.GA has served over 730 students. The majority of participants are girls of color (96%) and those who qualify for free or reduced lunch (98%). Each year approximately 18-20 girls matriculate from GA to Alverno with about half majoring in STEM. The summer research program has supported 73 researchers (56 unique students), 65% who identify as women of color with a 95% persistence rate. A common themed found was an increase in personal identity as a scientist (self-efficacy). Furthermore, 54% of 2021 summer researchers applied for off-campus research opportunities.

Biehn, Nicholas

Institution: ***PA - Susquehanna University***

Discipline: Biology

Author/Contributors:
Nicholas Biehn,
Bethany Hanak,
Samantha Reeder

Abstract Name: The effects of arbuscular mycorrhizal fungi on plant defense in Nicotiana rustica in response to simulated herbivory

Plants have evolved various techniques by which they protect themselves from herbivore damage. In developing these defense mechanisms, plants allocate resources away from growth to increase chances of survival. In an effort to compensate for this distribution of resources, studies have shown that plants can enlist the help of arbuscular mycorrhizal fungi (AMF), a mutualist that penetrates roots and exchangesinorganic nutrients for sugars. Prior research has indicated that under certain conditions both growth and defense increase inAMF-inoculated plants.Nicotiana rustica is one species that is associated with AMF. This tobacco species possesses both physical and chemical defenses, primarily in the form of trichomes and the alkaloid, nicotine. Through inoculation of this tobacco with AMF, we can investigate the mutualists effect on growth and defense mechanisms. In thisgreenhouse experiment, we will be looking at the effects of inoculation timing coupled with simulated physical herbivory. Plant mass measurements will betaken72 hours post herbivory. Nicotine levels and trichome density will be analyzed on select leaves of each treatment group. Based onprevious research, we expect to see increased defense in all herbivore damaged plants as well as heightened growth in all AMF inoculated plants. Higher levels of defense will be shown in all damaged inoculated plants, with the greatest levels seen in plants inoculated post germination.

Bielak, Jessie

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Trittelwitz *Jessie Bielak* *Reece Lisowski*
Andrew Mehus *Madilyn Tokarski*

Abstract Name: Yearly Survival and Growth Rates of Propagated Fatmuckets (Lampsilis siliquoidea) in Central Wisconsin

Freshwater mussels are key members of riverine ecosystems and are crucial for improving water quality. Mussels serve as valuable indicator species and suffer from many environmental disturbances, but despite their importance, large gaps remain in knowledge of freshwater mussels in Wisconsin. We measured the survival and growth of mussels exposed to ambient conditions in two streams in Central Wisconsin. Both selected streams included those that support diverse mussel assemblies. On October 29th, 2021, we received 120 Fat Muckets (Lampsilis siliquoidea) from the Genoa Fish Hatchery, measured, then released them into suitable areas on the Mill Creek; the Plover River Near Stevens Point, WI. Before release, mussels at the Mill Creek site averaged 1.853 cm in length, 1.03 cm in width, and 0.52 cm in thickness. At the Plover River site, mussels averaged 1.859 cm in length, 1.068 cm in width, and 0.546 cm in thickness. We utilized silos to encompass the 1.5-year-old mussels. Each site has 1 silo, containing 15 individuals per silo. Our objective is to determine seasonal survivorship and growth rates throughout our year-long study. Experimentation at these sites will provide an indication to determine which areas are suitable for future reintroductions. We expect 1) Mussel growth and survival will be significantly reduced in the winter months, compared to the summer months. 2) Mussel growth and survival will be significantly different between the two sites. These sites were measured monthly beginning April 21st and lastly October 21st, 2022. This is part of an ongoing study through the University of Wisconsin – Stevens Point's student chapter of The Wildlife Society.

Bierman, Alyssa

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Junior Tochimani,
Alyssa Bierman,
Jacob Grabinski,
Shalyin Jochum,
Aspen Mercer,
Jackson Turk

Abstract Name: Social Media and Self-esteem

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negative information that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development. The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Biertzer, Andrew

Institution: ***WI - Carthage College***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Andrew Biertzer,
Zachary Hale,
Andrew Pustina

Abstract Name: Competition Demands of NCAA Division III Women?s Collegiate Lacrosse

In an effort to assess the demands of NCAA DIVISION III woman's collegiate lacrosse, Global Positioning Systems (GPS) were used to quantify positional demands during the 2022 College Conference of Illinois and Wisconsin season (NCAA Division III) for the Carthage College Women's Lacrosse team. GPS data was collected from twelve female athletes using a sampling rate of 10 Hz (Titan 2, Integrated Bionics Inc. Austin, Texas). When comparing total distance by position, a statistically significant difference was found between the midfielders and attackers ($p < 0.01$; ES = 1.75, large) and between the midfielders and defenders ($p < 0.01$; ES = 1.95, large). No differences were observed between attackers and defenders ($p = 0.15$; $d = 0.34$, small). The main finding was that midfielders covered significantly more total distance than both attackers and defenders. Calder et al. (2021) observed similar distances among female defenders (7517 ± 786 m), midfielders (6972 ± 770 m), and attackers (6806 ± 586 m) at the NCAA Division I level. Calder's findings were that defenders covered the most distance during competition; conversely, the midfielders covered the most distance in this study. These differences are likely due to the teams' style of play and talent level. Furthermore, all positions experienced a decline in total distance covered as the game progressed, consistent with other studies (Calder et al., 2021; Varley et al., 2014). These effects are likely due to fatigue, and by developing positional profiles of volumes throughout match-play, coaches can ensure their athletes are prepared for competition demands. It is suggested that coaches and practitioners ensure lacrosse players can handle distances of 6130-8110 m during match play; it is best achieved if players are trained by positional needs. This specific training may help reduce the progressive loss in total distance covered with each quarter played.

Bigalke, Tess

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Trittelwitz,
Tess Bigalke,
Shayla Schmitz

Abstract Name: **Analysis of Waterfowl Browse on Wild Rice (Zizania spp.) in Northwestern Wisconsin**

In Northwestern Wisconsin, wild rice (Zizania spp.) not only serves as an important food source for people and animals, but it is also a particularly important cultural grain. Wild rice is an abundant and nutrient rich food source used by several waterfowl species including swans and geese. Although wild rice grows in a cyclic pattern, the increased presence of swans and geese on flowages in Northwestern Wisconsin may affect wild rice availability in the area. For example, waterfowl species have been observed eating wild rice stands and they appear to have been mechanically mowed in Crex Meadows State Wildlife Area. How intense use of these stands by waterfowl affects wild rice production is unknown. To measure the possible effects of these waterfowl species on wild rice, we constructed exclusionary fences on three flowages. We compared weight, height, density, and substrate samples from inside and outside the exclusions to investigate the possible overgrazing by swans and geese. We collected 10 samples from inside each fence and 10 outside (N = 60 plants) across all three flowages monitored. A sample plant was taken within each study quadrat at random, washed, dried, and weighed. Samples were processed in the herbarium at the University of Wisconsin – Stevens Point. We predict that wild rice densities and biomass will be higher within the exclusionary fencing than the wild rice outside the exclusions that is actively available to browse by resident waterfowl species. We will discuss the impacts of waterfowl overgrazing on wild rice stands in Northwestern Wisconsin.

Billen, Atley

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Atley Billen

Abstract Name: **Sexual Assault Awareness and Prevention**

This exploratory study examines the knowledge about prevention and education on sexual assault and how the topic needs to be discussed often. The research aims to inform the audience on the problem of how society discusses sexual assault, and it explores reasons for reporting.The student researcher reviewed six peer-reviewed journals about sexual assault. Trauma-Informed Perspective and Strengths-Based Perspective also informed the study. The student researcher administered 25 surveys to three different populations: college professors, advocacy directors, and college students. The researcher's hypotheses center on the perception of program effectiveness based on the type of participant. The researcher used a non-probability purposive sampling method with mixed-method survey of qualitative and quantitative questions. The student researcher collected data for 30 days. The student researcher distributed an online survey with demographic questions, questions regarding the reporting process, improvement, and needs during the duration of this process.The student researcher used quantitative analysis such as chi-square tests and correlations to determine any statistically significant findings. The qualitative data is observed from the open-ended questions to identify codes, categories, and themes.The survey contained four demographic questions regarding gender, age, race, and the participant's status. The majority of the participants were female (64%, n=16), 18 to 24 years old (80%; n=20), White American (80%, n=20), undergraduate students (72%, n=18). The student researcher ran a Bivariate Correlation to determine the relationship between age and reporting. The Pearson correlation between the two variables age and reporting revealed a moderate to a strong relationship.The student researcher examined 25 qualitative responses, of which 23 generated codes were collapsed into 4 themes.This research has implications for the micro, mezzo, and macro levels of social work practice. By exploring further information on advocacy programs, researchers will provide a better understanding of how to increase reporting on college campuses.

Billings, Laura

Institution: *TN - Christian Brothers University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Laura Billings,
Paola Campos Luis,
Amy Guerrero,
Edgar Villarreal,
Erlin Rodriguez

Abstract Name: **Neural and Behavioral Correlates of Sensation Seeking**

We sought to clarify both behavioral and neural characteristics of sensation seeking. In particular, we were interested in two components of event-related brain potentials (ERPs) elicited during a response inhibition task: the P3a, which is elicited by novel, unexpected, stimuli, and the P3b, which is elicited by targets. Participants completed self-report questionnaires to measure their sensation seeking. During the task, participants were presented with three types of visual stimuli in randomized order at a rate of approximately one every 1.25 s. The stimuli were (1) non-targets, to which they should make a response, (2) targets, to which they should withhold a response, and (3) novel stimuli, to which they should withhold a response. The targets and non-targets were relatively benign, but required sustained attention to tell them apart. The novel stimuli were photographs depicting arousing situations (e.g., skydiving). Based on previous research, we predicted that (1) the P3a would be positively correlated with sensation seeking, (2) the P3b would be negatively correlated with sensation seeking, and (3) response accuracy to novel stimuli would be inversely correlated with sensation seeking. P3a and total sensation seeking were positively correlated, but the relationship was small and not statistically significant. In contrast to our prediction, P3b was moderately positively correlated with total sensation seeking. Finally, response accuracy was not correlated with total sensation seeking. Although none of our hypotheses were supported for total sensation seeking scores, we did find relationships between the ERP components and total sensation seeking, boredom susceptibility, and disinhibition.

Biltgen-Morrissette, Gabrielle

Institution: *FL - Nova Southeastern University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Carmit Alexenberg,
Gabrielle Biltgen-Morrissette

Abstract Name: **The Universal Mass Function and its Applicability to Organic Molecules**

The ability to predict the yield when synthesizing an organic molecule is a challenging issue in organic chemistry and a major obstacle when planning a multi-step organic synthesis.It would be beneficial to predict the yield of the product such that the most time, money, and waste efficient method can be used.The Universal Mass Function (UMF) states that cosmic objects on all scales are in direct relation to each other. It shows that massive objects are much rarer than objects with lower masses. The following research aims to examine if the UMF theory is applicable to the field of organic chemistry, specifically to theyield prediction.The primary reaction chosen for this research was the substitution reaction of alcohol to different derivatives of alkyl halides in protic environment. For that reaction, due to the widely known reactivity of the molecules in protic environment, we expect to observe results that are opposite of that which support the UMF.Due to the known reactivity of the molecules, the largest halide is expected to have the largest yield based off nucleophilic properties. However, preliminary results contradicted this and supported the UMF theory as we received higher yields from alkyl halides derivatives with lower molecularweights.Ratificationof the Universal Mass Function on small-scale molecules is significant since in addition to helping overcome a major problem in the field of organic chemistry. It would make a huge impact on the pharmaceutical industry by enabling the prediction of the most efficient drug synthesis.

Binnett, Amelia

Institution: *CA - Mills College at Northeastern University*

Discipline: **Biology**

Author/Contributors:
Amelia Binnett,
Chelsea Ortiz-Jimenez,
Jennifer E. Smith,
Andrew Sih

Abstract Name: **Risk-sensitive behaviors vary with human activity, age, and personality in free-living California ground squirrels**

Animal personality, defined as consistent individual differences in behavioral response over time, is a well-documented phenomenon within natural populations of animals. Previous studies have examined the effects of intrinsic state and population membership on behavior; however, few have explored the effects of human presence on personality. For this study, we developed a behavioral assay to quantify individual responses of free-living California ground squirrels (Otospermophilus beecheyi) from two populations that differ in their exposure to human presence. We examined the extent to which each of the four major behavioral responses (e.g., vigilance, hiding, exploring, chewing/scratching) were repeatable for individuals over time, and the effects of age, sex, mass, and study site on these measures. We found strong evidence for repeatable personality traits for all behaviors except for vigilance. Instead, vigilance was best explained by an individual's attributes (e.g., age, sex, adjusted mass) and current environmental conditions (e.g., day of year, site of trapping). Our findings have implications for understanding the effects of ontogeny, season, and human activity on animal personalities.

Birch, Bryan

Institution: *KY - Centre College*

Discipline: **Education**

Author/Contributors:
Bryan Birch,
Caroline Murphy

Abstract Name: **Investigating Preservice Teachers' Understandings of the Causes of the Seasons**

Understanding the causes of the seasons is a major concept addressed in A Framework for K-12 Science Education and the Next Generation Science Standards (NGSS) in grades K-12, and a concept preservice K-12 teachers are expected to understand. The purpose of this explanatory mixed-methods study was to assess preservice teachers' understanding of causes of the seasons and categorize prevalent alternative conceptions they have about this domain. Seventy-two undergraduate students enrolled in education courses at a large midwestern university and a small midwestern liberal arts college participated in the study. A multiple-choice concept inventory survey including two open response tasks was developed from the research literature for the study. The survey data were then used to purposefully select a stratified sample of students to participate in a follow-up conceptual interview. Descriptive statistics were used to analyze concept inventory data, and qualitative deductive coding using a constant comparative method was used to analyze interview responses. Preliminary survey findings collected from the liberal arts college indicated an average score of 5.39 out of 15 (35.9%) with a range from 2 to 12 and a median of 5. Overall, they demonstrated greater understanding on questions answerable from an Earth-based perspective with a mean of 65% on three questions. These tasks addressed the time of year their region experiences the greatest amount of sunlight and naming the corresponding season in the southern hemisphere given the northern hemisphere season. Students scored the lowest (mean of 28% on 10 tasks) on tasks that required explanations from a space-based perspective, such as causes of the seasons and why there is more sunlight during summer in the northern hemisphere. Details from the entire data set from 72 students and concept interview also will be presented.

Bishop, Mercedes

Institution: ***VT - Norwich University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Mercedes Bishop *Helene Sisti* *Elias Gabrielsson*
Annika Beebe

Abstract Name: Exploring the Contextual Interference Effect Using a Bimanual Coordination Task

Stroke, amyotrophic lateral sclerosis (ALS), and other movement disorders result in loss of upper limb function, thus impairing bimanual coordination. Motor imagery is an effective clinical intervention for accelerating recovery; however, the cognitive and neurophysiological parameters that inform effective strategies remain elusive. The study aims to explain the neural dynamics that underlie bimanual coordination during real and imagined movement. Healthy young adults (n=13) learned a visuomotor tracking task using either one or both hands in a single session. Two dials control the movement of an on-screen cursor. The left and right dials correspond to vertical and horizontal cursor movement. The participants were tasked with tracking a moving target using the left and right dials with the appropriate speed and direction. Before the session, each participant was fitted with a 40-channel EEG cap (Compumedics, Neuroscan). Two phases were tested: unimanual and bimanual control. The first phase consisted of unimanual control using the left hand to draw a vertical line and the right hand to draw a horizontal line. The second phase consisted of bimanual control in a 3:1 pattern followed by a 1:3 pattern. The pattern notation represents the ratio of left-hand turns to right-hand turns. Trials were 10 sec in duration, elapsed time from target origin to target endpoint; the intertrial interval (ITI) was 5 sec. Each trial block was followed by a mental imagery condition (MI) where participants were asked to imagine performing the task they had just completed with their eyes closed. Mental chronometric data were collected, and vividness ratings were assessed by self-report immediately after each trial block. The results indicated learning in a single secession; [F(1,10)=19.43, p<.001]. EEG analyses of active vs. rest conditions, and real vs. imagined conditions, are underway. These results may inform neurorehabilitation strategies for patients recovering from movement disorders (upper limbs).

Bishop, Michael

Institution: ***IL - Trinity Christian College***

Discipline: Chemistry/Materials Science

Author/Contributors:
Michael Bishop,
Michael Bosscher,
Jon VanderWoude

Abstract Name: Developing A Safe-At-Home Benzoin Condensation from Imitation Almond Extract

COVID-19 remote learning forced instructors to scramble for meaningful organic laboratory experiences safe enough to perform at home. While resources are available for laboratory experiments at home, organic synthesis suffers from issues involving safety, difficulties measuring reagents, and difficulties analyzing products.Benzoin condensation reactions commonly use bases such as sodium hydroxide or triethyl amine, and organic solvents that are less safe and not widely available.We were able to use a pinch of baking soda instead of stronger and less available bases. We were able to perform the reaction with imitation almond extract with no additional solvents, eliminating the need for separate sources of benzaldehyde and organic solvent.Most laboratory reactions are measured out in grams on scales precise to the milligram unit or better.Unfortunately, most students don't have such scales available at home. For catalytic reagents, we were able to use readily available at home kitchenware such as a teaspoon or other common cooking measurements such as "a pinch". The benzoin condensation is a convenient reaction to perform at home because the benzaldehyde is self-reactive, allowing us to avoid precise stoichiometric measurements of any reagents.While many laboratory analyses will continue to remain out of reach for the home laboratory (although we have high hopes for an NMR in every kitchen), the clear development of white, needle-like crystals in this reaction offer a compelling visual confirmation of the reaction completion, while yellow tints that develop in the solution can indicate a further oxidation of benzoin to benzil, often a subsequent reaction in our in-person laboratories.

Bjorklund, Luke

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Business**

Author/Contributors:
Karla Gomez,
Luke Bjorklund

Abstract Name: **Grief Support in Nursing Homes**

A half-million older adults die in U.S. nursing homes (NHs) each year. These statistics have been compounded during the COVID-19 pandemic. As a result, growing numbers of older adults make end-of-life decisions and receive end of life services in NHs. However, only a few studies have been conducted on the experiences of the nursing home staff who provide this care. Mortality in nursing homes, staff attitudes, and environmental factors associated with mortality are important figures for health authorities and decision makers as they consider policy revisions to enhance care and outcomes. This research will provide valuable data in this area- in particular the purpose of this study is to examine the organizational practices in nursing homes specific to end of life care. Participants will be drawn from approximately 40 primarily Midwestern skilled nursing facilities utilized as administrative internship sites for students in the University of Wisconsin – Eau Claire's long-term health care administration program. Researchers will use a multi-step inductive approach to seek patterns of meaning within interview responses. The research team (four faculty members and two student researchers) will complete an initial review of the data set seeking common responses. Primary categories will be identified, and student research assistants will then code responses. After initial coding, the entire research team will meet to review and refine categories and verify coding agreement. The team will develop a master list of categories with examples of each category to reference and utilize during the coding process. The team will review the data for novel ideas that might be of interest for practitioners, providing suggestions for innovative operational improvements to end of life care. The dataset is currently being coded. A variety of both common and unique exemplars or practices that researchers believe could be considered for widespread adoption and implementation will be highlighted.

Black, Benjamin

Institution: *NC - North Carolina State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
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Sekkappan Chockalingam *Jong E Ryu* *Saad Khan*

Abstract Name: **Template-Free, Scalable Manufacturing Process for Linear Periodic Microstructures with Drag Reduction Applications**

Inspired by nature, the scientific community have designed periodic micro/nano-scale surface structures for a wide variety of applications. One particular application of interest is superhydrophobic drag-reduction. By aligning these microstructures with the direction of fluid flow, prior modeling and experimentation have demonstrated up to a 75% a decrease in frictional drag. A common manufacturing process for these periodic microstructures is photolithography. This method allows for repeatable and accurate surface structures; however, it is limited by cost and scalability (typically produces one 6 in diameter surface). The limiting factors of photolithography impact the potential for practical applications, and as an alternative manufacturing approach, the scientific community have become interested in a ribbing phenomenon found in roll coating. This study controls the ribbing phenomena and demonstrates a template-free, simple, scalable manufacturing process to fabricate periodic microstructures. Carbon nanotubes (CNT) and polydimethylsiloxane (PDMS) are utilized to develop a viscoelastic composite material for roll-coating. During roll-coating, the process parameters are carefully controlled to maintain a linear structure. If the parameters are not controlled, the microstructure becomes random and emulates a surface pattern that is commonly found on lotus leaves, which is not ideal for drag reduction. The derived periodic microstructures, with a periodicity of 114-700μm, were hydrophobic with water contact angles (WCA) that ranged from 128°-158°. A model boat was then coated with a film of the fabricated microstructures and exhibited a 7-8% increase in velocity when compared to a boat coated with a flat PDMS film. Furthermore, the inclusion of CNTs improved the mechanical properties of the composite film. The cohesive failure of the CNT-PDMS composite occurred with around 90% more force than a simple PDMS film during a mechanical scratch test.

Blackert, Zachary

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
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Lauren Claas *Charlie Frey* *Sierra Mulhern*
Amik Redland *Kathrine Vandenberg*

Abstract Name: Detecting a Buried Log Flume and Canals: A Geophysical Investigation of the Subsurface

In the nineteenth century, the lumber industry was the impetus for western Wisconsin's development. Lumber was transported from forests to processing facilities via rivers. Humanmade waterways, such as canals and log flumes were built to connect rivers with sawmills. One such instance is in Eau Claire, Wisconsin, where canals and a log flume were built to connect the Chippewa River to Half Moon Lake. Little evidence of the flume ditches, tunnel, and canals are present above ground as they have since been filled. Flume ditch, flume tunnel, and canal locations were identified through archival research, georectification of historical maps, and aerial photographs. Studies have shown that ground penetrating radar (GPR) is a viable method for locating tunnels and ditches. GPR is a non-invasive subsurface imaging method which utilizes electromagnetic pulses and their reflections. GPR was used to locate evidence of the flume and canals in the subsurface based on historical maps and aerial photos. Data was collected using a pulseEKKO Pro GPR system with 100MHz antennae, and a 0.25m step size along survey lines. Data was collected in reflection survey mode, with a 500ns time window. GPR transects were topographically corrected with 2m interval data collected using a Topcon RL-H4C laser level. Data was processed and visualized with EKKO_Project V5. GPR data was interpreted with considerations for land use changes over time, and with maps and aerial imagery depictions of features. Modelled results show subsurface features unique to the flume ditch, tunnel, and canal structures which have been altered by redevelopment. Unique features of these structures are size, shape, and position relative to historical maps and aerial photographs.

Bladow, Hannah

Institution: ***MN - St. Catherine University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Hannah Bladow,
Alvin Akibar

Abstract Name: Transgender and Gender Diverse Individuals of Various Resident Locations and Racial and Ethnic Identities Healthcare Experiences

Research has outlined barriers to quality healthcare for trans individuals. As resident location becomes more rural, healthcare access and quality decrease. Extant research has yet to determine how this impacts explicitly Black, indigenous, and people of color (BIPOC) transgender and gender diverse (TGD) patients' access to informed healthcare practitioners - an extension of historic underrepresentation in research both as researchers and participants. This exclusion, and its structural underpinnings, are illustrated in higher rates of healthcare insecurity and a medical education system that continues to teach racist and inaccurate information, lacking in the nuance of intersectional realities faced by TGD BIPOC. How does the relationship between resident location, racial and ethnic identity, and healthcare access function? This cross-sectional, mixed-methods study examines the relationships between race, location of residence (rural, urban, suburban), and healthcare access/quality for TGD healthcare patients. Our team wrote survey questions that assess various attributes of healthcare access (such as commute time to the healthcare facility, access to health insurance, emotional comfortability accessing care), healthcare experience (such as instances of discrimination in the healthcare setting), and demographic questions (such as participants location of residence (rural, urban, suburban), and racial/ethnic identity). We conducted six pilot cognitive interviews to aid in questionnaire revision. We launched our broad wave participant recruitment of a national sample, with plans to complete data collection and begin data analysis in December 2022. Anticipated outcomes include calls to action for healthcare practices and policies affecting TGD BIPOC and creating a social media page to share our findings and resources more broadly with the TGD community.

Blan, Moriah

Institution: ***IL - Trinity Christian College***

Discipline: Biology

Author/Contributors:
Moriah Blan,
Robert Boomsma

Abstract Name: Mitochondrial Transfer Between Mesenchymal Stem Cells and Cardiac H9c2 Cells

Mesenchymal stem cells (MSC) have been shown to improve heart function after myocardial infarction, but the exact mechanisms are not completely understood. Studies have shown that stem cells are able to transfer mitochondria through cytosol extensions to change the abilities and programming of surrounding cells. The purpose of this study was to determine whether mitochondrial transfer takes place between MSCs and cardiac H9c2 cells, and the effect of hypoxic conditions on this process. The mouse bone marrow MSC cells were cultured in DMEM + 10% FBS for MSC and H9c2 cells were cultured in DMEM + 10% FBS. Previous studiess stained the MSC mitochondria using MitoTracker Red CMX Ros (Invitrogen), while H9C2 cells were stained using CellTracker Green CMFDA (Invitrogen) according to the manufacturer's instructions. Following staining, the cells were co-cultured for 24 hours in Fluorobrite DMEM (Gibco) + 10% FBS in 4-well glass culture slides. After washing with PBS and mounting with ProLong Live Antifade Reagent (Invitrogen), cells were observed using an Olympus BH2 fluorescent microscope. Results showed close interactions between MSC and H9c2 cells with mitochondria in long filamentous extensions that made contact with H9c2. There was some evidence that mitochondria were transferred from MSC to H9c2 cells. We now are looking to determine whether mitochondria are able to travel in both directions. We will also study whether mitochondrial transfer is affected by hypoxic (1% O2) conditions. These results continue to suggest that mitochondrial transfer may be one mechanism used by MSC to improve heart function after myocardial infarction.

Blancas, Sebastian

Institution: ***TX - The University of Texas at El Paso***

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Blancas *Jose Luis Herrera* *Manuel Morales,*
Valeria Valencia *Daniel Flores*

Abstract Name: Efficacy of Social and Physical Support for Cancer Patients

Cancer is the second leading cause of death in the United States. In addition, cancer treatments provoke harsh side effects that demand extra strength from the patient. Cancer causes lifestyle modifications that can be detrimental on the patients' health; however, healthy habits can potentially increase the chances of a positive prognosis. Additionally, physical, and social support has proven to help patients in their fight against cancer. Since the lack of physical and social activity in patients with cancer has been shown to correlate with mental and cognitive decline, ultimately reducing quality of life, the purpose of this study is to examine the relationship between physical activity and quality of life in patients with cancer And increase their overall quality of life.This project included eight female participants that are currently struggling with cancer, or the cancer is in remission. The program consisted of group discussions, fine motor movements, and various physical activities twice a week for three weeks. Using pre/post intervention questionnaires and a dependent t-test, the significance of social and physical activities amongst the participants were analyzed. The dependent t-test showed a significant difference (t=-3.729, p=0.007) in the overall quality of life between pre and post program. These preliminary results imply that implementing a support group such as Healthy Habits that includes the use of physical and social activity, improves the overall quality of life of patients with cancer. In conclusion, the program created an additional outlet for individuals with cancer to find a relatable support group that can aid with daily struggles. Further analyses in a larger sample and with longer duration will provide stronger evidence about the relationship between physical activity and quality of life in patients with cancer.

Blevins, Alexander

Institution: *KY - University of Kentucky*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alexander Blevins

Abstract Name: **Artificial Intelligence-Assisted Prediction Model of Climate Change Impacted Solar Power Generation for Life-Supporting Equipment in Eastern Kentucky During Natural Disasters**

As a person who has lived in the eastern Kentucky area for most of my life, floods are something that has been a consistent problem for the people who live there. There is a great effort to help those affected by natural disasters, but there is always a greater struggle for those impacted by their diminished health during natural disasters, like the historic eastern Kentucky flooding in 2022. The frequency and intensity of heavy precipitation events will become more common, exacerbated by climate change, leading to the kinds of flooding that once skipped generations to occur every few years.To ensure the safety of the people that need on-site power generation for their life-supporting equipment during natural disasters, we have developed the prediction model of solar power generation using Artificial Intelligence (AI) techniques and programming languages such as Python and MATLAB. Models will be developed considering weather patterns and climate variability, impacted by climate change. We could analyze the correlation of historical data on the timeline of natural disasters that have happened in eastern Kentucky. Utilizing developed models, we could prepare people prior to natural disasters by predicting when the next one will occur.Solar energy is a safe, environment-friendly, and abundant energy resource available for decentralized and on-site power generation that can reduce the burden of an electric power grid. Solar panels would work well for the life-supporting equipment whenever the power goes out during natural disasters since it makes the equipment not rely as much on the house's power grid connection. To ensure the effectiveness of the solar panels, we used historic weather data to predict how many solar panels would be needed during the time of year that the floods would occur. Using batteries, we could accumulate enough energy for the life-supporting equipment to run all night.

Blevins, Justin

Institution: *VA - James Madison University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Justin Blevins,
Megan Caulfield

Abstract Name: **Tactile Instructions for Wearable Physical Rehabilitation**

Patients of all ages, who have a range of medical conditions or injuries, use physical therapy to help ensure they have a full recovery. Physical therapy is useful to help manage pain, regain mobility and comfort, and return to activities. However, research has found as low as 35% of patients actively do at-home exercises for physical therapy. When patient adherence is low, recovery is less effective. This leads to further complications of the patient's condition and can hinder future recovery. Low self-efficacy is a leading reason patients say they do not do at-home exercises, as they believe they cannot effectively carry out an exercise on their own. The proposed research seeks to explore wearable computing systems to develop a device that enables patients to receive haptic feedback on their movements while at home and apply corrections as though a therapist was working hands-on with them, thereby increasing their confidence in completing the activity. To date, wearable technology most frequently uses accelerometers and inertial measurement units to track human motion and performance. Designing wearable devices that are comfortable, adjustable, and interpretable by the wearer, is challenging. Our current design uses haptic feedback to help users receive feedback on simple activities. We developed a glove with embedded motors that vibrate guiding the movement of the patient within a two-dimensional plane. Ongoing research is exploring extensions of this approach to upper-arm mobility by developing novel tactile instructions. A user study will be conducted to explore vibration patterns and examine the upper arm mobility with tactile motor instructions.

Blew, Cassie

Institution: ***CO - University of Colorado at Boulder***

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassandra Blew,
Corinna Burger,
Dan Greenspan,
Sue Osting

Abstract Name: Ablation of Mitochondrial RCC1-like in Dopaminergic Neurons Yields a Parkinsons Disease-like Phenotype and Abnormal Mitochondrial Morphology in Mice

Parkinson's disease (PD) is a neurodegenerative disorder that results in memory and learning deficits as well as unintentional or uncontrollable movements (i.e., resting tremors, muscle stiffness, etc.). Recently, mitochondrial dysfunction has been linked to both idiopathic and familial forms of PD. Rcc1-like (Rcc1L) protein, found in the inner mitochondrial membrane, has been identified as playing an important role in mitochondrial fusion. Our group has selectively knocked out Rcc1L in mice dopaminergic (DA) neurons within the substantia nigra pars compacta (SN), which results in PD-like phenotypes including progressive movement abnormalities and degeneration of the nigrostriatal track. In this phase of experimentation, mitochondrial morphology in the SN is being defined by imaging mitochondria shape within coronal tissue samples under a confocal fluorescent microscope. Heterozygous and wild-type models are used as comparisons to knockouts at 2 months, 3.5-4 months, and 5.5-6 months of age. Defects in mitochondrial morphology are apparent as early as 3.5-4 months, pointing to a role of Rcc1L in mitochondrial dysfunction characteristic to PD pathology.

Blissenbach, Easton

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ethan Olerich,
Claire Dennis,
Easton Blissenbach,
Megan Worzalla,
Jamie Lyman Gingerich

Abstract Name: Analysis of 2 variants of CERKL, a gene associated with ocular disease

Genetic testing, including whole genome and exome sequencing, is quickly becoming a standard healthcare practice, especially for patients with rare diseases. While some changes to DNA sequences can be benign, there are several variants that have not been characterized. One large group of these variants are classified as variants of uncertain significance (VUS), as the effects have not been directly studied yet. However, effectively interpreting the relationship between identified variants and disease remains challenging. VUS can include variants that are predicted in silico analyses to affect splicing of the pre-mRNA into mature mRNA. Disruption of splicing can result in loss of a functional gene product due to exon skipping, changes in the reading frame, or introduction of a premature stop codon. In collaboration with PreventionGenetics, our lab analyzes VUS predicted to affect splicing of genes using a minigene system. Briefly, the minigene system involves cloning a single gene segment into a plasmid vector which is transfected into eukaryotic cells. Processed mRNA transcripts are then sequenced to determine the effects of the variant on splicing. We will present our analysis of 2 variants in the CERKL gene and their potential clinical relevance.

Bloodgood, Dustin

Institution: *MN - Minnesota State University - Moorhead*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Dustin Bloodgood *Bridgett Grosz* *Brennen Bordwell*
Xavier Castro

Abstract Name: **XRF Analysis of Pb Concentrations in Soils in and near Moorhead, MN**

Prior to its ban in 1996, leaded gasoline was available for use in all vehicles. We suspected there was an increased concentration of lead in the soil near Highway 10 near Moorhead Minnesota. The purpose of this experiment is to determine the impact of anthropogenic lead in soil.We collected 6 urban soil samples within Moorhead along parks, residential areas, and our college campus. We collected 18 rural soil samples east of Moorhead along highway 10 including two perpendicular transects to highway 10. A transect 1 mile, and a transect 7 miles east from Moorhead going North and South respectively. We collected both surface samples and samples approximately 6 to 12 inches in depth.We analyzed the samples by drying the samples at 100°-105°C for 18-19 hours. Using an agate mortar and pestle, we ground the samples to a powder. A Hitachi X-Met8000 Handheld-analyzer was used to analyze the elemental composition of the samples. We aimed to determine correlations in lead levels.Pb concentrations in urban areas ranged from 17 to 175 ppm. Rural variations showed a decrease in lead concentrations eastward along Highway 10 as well as a decrease away from highway 10 for the transect taken 1 mile from town. In rural and urban samples, we observed Pb statistically significantly decreased with depth.Our results show a trend in lead concentration with location and depth consistent with air-deposited lead from leaded gasoline. Although, regions with no obvious anthropogenic lead were decreasing in Pb levels relating to depth, as well. This suggests that soil genesis processes may also be a factor in the Pb concentrations, and warrants further research. Although most samples remained under the 100 ppm EPA guidelines for residential gardens, 2 urban samples taken along a major street exceeded this value.

Blume, Lauren

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
Lauren Blume,
Brian Wallace

Abstract Name: **Beyond the Injury: The Association Between Physical Characteristics and Injury in Competitive High School Dance Team Athletes?**

Our purpose is to determine the association between physical characteristics and function and injury incident and risk in competitive high school dance team athletes. Lower extremity injuries are one of the most prevalent injuries within dance, accounting for over 30% of injuries reported by dancers. Past research has investigated risk factors and patterns for injuries in pre-professional dancers. However, the association between physical attributes and lower extremity injury in high school team dancers has not been studied. Participants will be recruited through athletic directors and sport coaches at regional high schools. Prior to participation, dancers and/or guardians will provide written assent. They will be measured for various fitness and performance characteristics during the Summer of 2022, including height, weight, body composition, cardiovascular endurance, balance, flexibility, neuromuscular control, lower body relative power, and grip strength. The dancers will then be tracked through their coaches through their competitive season for lower extremity injury, and data will be collected until February of 2023. The data will then be analyzed through inferential statistics to determine differences in the measured values of those who did and did not sustain lower extremity injury. Additionally, logistic regression will be utilized to develop a predictive model for injury.

Blumhoefer, Hannah

Institution: ***IA - Iowa State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Hannah Blumhoefer,
Mohamed Shabara,
Ossama Abdelkhalik

Abstract Name: A CONTINUED HIGH FIDELITY NUMERICAL ANALYSIS OF VARIABLE-SHAPE WAVE ENERGY CONVERTERS

A continued analysis of the novel Variable-Shape Buoy Wave Energy Converter (VSB WEC) to reduce reactive power requirements is presented in this paper. An original ninety degrees VSB WEC power take-off (PTO) unit connection location with a separate concrete plate was previously explored. An improved, buoy-integrated connection location of the PTO unit allows for enhanced nonlinear interactions between the VSB WEC and ocean waves, resulting in an increase in energy harvesting. The extension of the flexible buoy shell to the PTO unit connection point increases the continuous volume available for buoy deformation. A high-fidelity numerical simulation is used to contrast the energy harvesting capabilities of the improved VSB WEC with the original VSB WEC and conventional Fixed-Shape Buoy Wave Energy Converter (FSB WEC). A previously developed Computational Fluid Dynamics (CFD) Numerical Wave Tank (CNWT) using ANSYS 2-way fluid-structure interaction (FSI) is used to construct and simulate the three WEC behaviors and ocean wave conditions. Irregular ocean wave conditions in the CNWT are consistent across all three WEC simulations to accurately compare energy harvesting performance. A consistent buoy volume and mass are used to analyze the three WEC velocities, maximum displacements, PTO unit damping force behaviors, and power production. Results from the simulations indicate that the energy harvested from the improved VSB WEC shows significant increases in both transient and steady-state behavior compared to the previous VSB WEC configuration and FSB WEC energy harvesting. Future work in model development, simulation time extension, and computational cost minimization is also discussed in this paper.

Boardman, Alexandra

Institution: ***KY - University of Kentucky***

Discipline: Education

Author/Contributors:
Jacquelyn Armstrong,
Alexandra Boardman

Abstract Name: Shifts in Educators' Demands as a Result of a Global Pandemic

Previous researchers have found a number of demands facing K-12 educators in the height of the COVID-19 pandemic: learning loss amongst the poorest students (Moscoviz; Evans, 2022), difficulty maintaining discipline (Thakur et al., 2022), struggle to balance work with personal lives (Matthew et al., 2021), more time spent troubleshooting problems with technology (Herold; Kurtz, 2020) and barriers to e-learning (Maatuk et al., 2021). While there is some research on the needs of teachers during the peak of COVID-19 (Thakur, et al., 2022, Oramiz-Etxebarria, et al. 2021, Ansorger, 2021), there is not enough research on teachers' needs and supports in the present day as the pandemic comes to a close. Consequently, the purpose of this study was to use Maslow's Hierarchy of Needs (Maslow, 1943) to analyze the needs of teachers in a post-pandemic era. Specifically, the questions that we sought to answer were "What support mechanisms do teachers need in a post-pandemic era?" and "How do these needs differ from pre-pandemic needs?" This explanatory mixed methods study (Creswell, 2007) began with a survey that was sent out to K-12 teachers across the United States via social media to assess teachers' demands prior to the COVID-19 pandemic and present day. Following the survey, qualitative interviews were conducted with a sample of respondents to further inquire about their responses. The preliminary data suggests that present day teachers are experiencing these top three demands: student behavior, gaps in student knowledge, and respect for the teaching profession. The data also suggest that educators experienced similar demands prior to the COVID-19 pandemic, but with lesser concern. These final results will inform administrators and school districts of how to better support the present day needs of their teachers.

Boatman, Casey

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Casey Boatman

Abstract Name: Computer Simulation of Doped Amorphous Li3OCl Electrolyte for use in Next-Generation All-Solid-State-Batteries

As demand for renewable energy increases, the need for reliable energy storage technology becomes increasingly important. Lithium-ion batteries (LIBs) are the most widely used energy storage device in consumer electronics. However, current LIBs use flammable liquid electrolytes, which is a serious safety concern. Current Solid-state electrolytes mitigate the hazards of liquid electrolytes, but come with expensive manufacturing cost and limited ionic conductivity. Lithium-rich anti-perovskite (LiRAP) electrolyte materials have been recognized as a promising family of solid-state electrolytes for next-generation all-solid-state batteries owing to their structural stability, low fabrication cost, minimal environmental impact, and improved safety regarding chemical toxicity and flammability. Recently, doped glass electrolytes synthesized from LiRAPs have been reported to exhibit superionic conductivity with a high electrochemical window while maintaining thermal stability. However, an atomistic understanding of these electrolyte materials is lacking. Using computer simulation based on the density functional theory (DFT), the structural characteristics of doped amorphous Li3OCL (LOC) will be investigated. Ionic conductivities will be calculated using ab initio molecular dynamics (AIMD) simulations as implemented in the Vienna Ab Initio Simulation Package (VASP). Various dopants, including Barium, Magnesium, and Scandium will be studied and the effects of ionic radius, valence states, and impurity concentrations will be explored. Based on these results, strategies to further enhance the ionic conductivity of amorphous LOC will be Proposed. Our research could lead to solid-state electrolyte materials with ionic conductivities comparable to those of contemporary liquid and polymer-gel electrolytes, which will be the ideal candidates for use in the next-generation all-solid-state batteries.

Bobba, Sai Sumedha

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sai Sumedha Bobba *Casey Mahoney-Crane* *Laura Volpicelli-Daley*

Abstract Name: Mutant GBA1 Mice Show Impaired Contextual Memory and Increased Hippocampal ?-synuclein Pathology in a Parkinson's Disease Model

Parkinson's disease (PD) impacts over 2 million people in the United Statesand over 10 million people worldwide. PD is pathologically characterized by the accumulation of neuronal α-synuclein (α-syn) aggregates, termed Lewy pathology. Lewy pathology is significantly correlated with decreased cognitive function. The most common genetic risk factor for PD is mutations in the gene glucocerebrosidase-1 (GBA1), which encodes for the lysosomal enzyme Glucocerebrosidase (GCase). Approximately, 7-11% of all PD cases show a GBA1 mutation. Patients heterozygous for the GBA1 L444P (GBA1+/L444P) mutation demonstrate a 5.6-fold increased risk for developing dementia. The effects of GBA1+/L444P expression on the hippocampus, a brain region that plays an integral role in cognitive function, are not fully understood. Thus, we sought to determine the effects of the GBA1+/L444P mutation on spatial learning, memory, and hippocampal α-syn pathology. To analyze behaviors associated with hippocampal function, behavior paradigms such as fear conditioning and Barnes maze were used. Our data show that by 3-mo of age, GBA1+/L444P froze less than their wildtype (GBA1+/+) controls, suggesting impairments in contextual memory. Concurrently, data derived from immunoblot experiments suggest that GBA1+/L444P mice exhibit a lower expression of the presynaptic protein vGLUT1 in the hippocampus. We also injected mice with α-syn preformed fibrils to induce formation of α-syn inclusions. Immunofluorescence and confocal microscopy revealed that hippocampal α-syn aggregates were significantly increased in GBA1+/L444P mice compared to GBA1+/+ 9-months post-fibril injection. Overall, these data reveal that heterozygosity for GBA1 L444P contributes to impairments in behaviors associated with hippocampal function, and selectively increased α-syn pathology in the hippocampus. Recent advancements in research and healthcare have developed treatments for PD symptoms; however, studying how to prevent the formation of α-syn aggregates is crucial in developing novel treatments that will slow the progression of PD.

Bobrowicz, Tatiana

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Maya Frodl,
Saige Tichy,
Lauren Glenna,
Tatiana Bobrowicz,
Sophie Gardiner

Abstract Name: 3D Printing to Improve Patient Outcomes for Mini-Thoracotomy Aortic Valve Replacements and Mini-Mitral Valve Repairs

Aortic valve replacement (AVR) was established in the 1960's and has become a routine therapy to treat patients with severe aortic valve dysfunction. AVR is usually performed using a full sternotomy and cardiopulmonary bypass support. Since the late 1990's, minimally invasive procedures have been developed for aortic valve surgeries, such as the mini-thoracotomy AVR. These less invasive procedures claim reduced postoperative complications, shorter lengths of stays in the hospital, and lower mortality. However, the minimally invasive nature may provide challenges in the viewing of patient anatomy during the procedure. This project will provide the 3D printing capabilities needed to investigate if using 3D printed anatomical models for pre-operative planning and/or patient education will result in better patient outcomes for mini-thoracotomy AVR surgery, particularly in those with thoracic abnormalities. For selected patient cases, the Mayo Clinic Luther Campus will provide UWEC researchers with DICOM files for segmentation and 3D printing. The UWEC research team will perform the segmentation and provide the physical 3D anatomical model with initial feedback on accuracy from Mayo physicians. Ultimately, the Mayo Clinic collaborators will evaluate the effectiveness of using the 3D models in patient outcomes as well as patient education on the procedure.

Boe, Lily

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Danielle Kmieciak,
Lily Boe,
Brayten Casey,
Bethany Rhodes,
Justin Swanson,
Kayla Wylie

Abstract Name: Role of Motivation on Academic Success B

The collegiate world is constantly discussing how student motivation is related to studentsuccess. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation is and how it impacts the academic success of college students. Factors that will be studied are intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation studens vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions addressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Boese, Rebecca

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:

Bryce Shoberg *Matt Laatsch* *Moriah Weiss,*
Rebecca Boese *Muhaison Ibrahim* *Krysti Knoche Gupta*

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La</sup>3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate cultures, one with La3+-rich media and one with Ca2+-rich media. Methylene blue is polymerized onto the surface of a glassy carbon electrode, then harvested bacteria or isolated enzyme is immobilized on the electrode by casting a mixture of the bacteria and tetrabutylammonium bromide (TBAB)-modified Nafion® onto the electrode surface. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria and isolated enzyme electrodes will be compared along with the electrode lifetimes.

Boettcher, Miranda

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Political Science

Author/Contributors:

Carrie Anderson *Miranda Boettcher* *Declan Lydon*
Lance Basting

Abstract Name: The Effect of Gerrymandering in the State of Wisconsin as it Pertains to Voter Turnout, the Number of Candidates Running for Office, Contested Districts, and Margin of Victory in Elections

In 2011 leaders from the Republican party in Wisconsin redrew the voting maps for the state. Their efforts resulted in a heavily gerrymandered map favoring the Republican party, which virtually assured Republican control of state level legislative politics for the foreseeable future. The issue of gerrymandered maps has been litigated at several levels including a hearing by the United States Supreme Court which issued a ruling in June 2019. The Court asserted that drawing voting maps lies within the realm of the state legislatures, and it is not the role of the federal courts to dictate rules and regulation pertaining to state voting maps. This ruling effectively quashed the most likely avenue for voters in Wisconsin to have fair voting maps.The question this correlational research seeks to answer is whether gerrymandering has had a significant cooling effect on voter turnout, the number of candidates running for state senate and assembly and the number of contested districts in the state. Additionally, researchers are interested in whether gerrymandering has resulted in a significant change in the margin of victory for either political party in gerrymandered districts. These variables will be examined by comparing pre and post gerrymandered elections in the state of Wisconsin.Researchers hypothesize gerrymandering has resulted in a significant decrease of voter turnout by district, a decrease in the number of candidates running for state legislative offices, a decrease in the number of contested districts in the state and an increase in the margin of victory in the districts that have been most heavily gerrymandered.

Bogan, Alia

Institution: ***IN - Indiana University Purdue University Indianapolis***

Discipline: International Studies

Author/Contributors:
Alia Bogan

Abstract Name: Women's Involvement in the Economy

The research focuses on how traditional societal views of women affect their participation in the economy in rural India. The case study focuses on rural areas in India because these areas tend to have more traditional conservative gender roles (i.e., women are expected to stay at home, take care of children, cook, clean, etc.). This study suggests that one of the main reasons for low rates of women in the workforce in these regions is cultural. The objective is to propose a model to help increase women's employment. The literature review consists of previous studies that have attempted to increase female employment. In order to create the model, previous cases were analyzed. The research looks at which methods were successful and which ones needed improvement. This research found that traditional gender roles are not the only factor affecting women's employment rates. The other factors that limit women's employment include corruption, lack of education, gender-based discrimination, societal preference for boys over girls, and an overall lack of support for working women. This research's proposed model can be used in other countries where female employment, particularly in rural areas, are low.

Bol, Nazaria

Institution: ***AR - John Brown University***

Discipline: Sociology

Author/Contributors:
Nazaria Bol

Abstract Name: Factors of Education and Economical Success of Northern Indigenous Guatemalan Women

This study aims to develop a deeper understanding of the lived experiences of Indigenous women from northern Guatemala and learn about what it takes for these women to be successful in pursuing education and being financially stable. Through a snowball sampling method, the researcher will reach out to Indigenous women from northern Guatemala in order to identify six women between the ages of 20 to 35, to be interviewed for this study. Three of these women will have stopped education in Elementary school, and the other three of these women will have either begun or completed their undergraduate college education. Through this phenomenological research methodology, the researcher will identify the resources and factors needed for Indigenous women from northern Guatemala to recognize the opportunities available for them in the future. Through this study, I, the researcher, anticipate that some of these factors are necessary for women to be successful in pursuing education and being financially stable: family support, access to money, good income, mentorships opportunities, access to news sources, encouraging professors, access to transportation, personal desires to continue education, access to quality schooling, and faith.

Bolchen, Kollin

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Kollin Bolchen

Abstract Name: Race and Religion in Wisconsin Prohibitionist Propaganda: The Demonization of the Urban Center

Prohibition remains a widely studied period of American history at the national level, but relatively little research has been done to analyze it at the state level in Wisconsin. Specifically, using a wealth of primary sources from the National Archives at Chicago as well as the Anti-Saloon League of Wisconsin, including activist pamphlets, newspaper articles, and organization memos, I have looked into the use of race and religion in prohibitionist propaganda in the state. I have found that Wisconsin prohibitionists, like in the rest of the country, used race and religion in their propaganda as a microcosm or euphemism of their demonization of urban centers. Additionally, I have found that Wisconsin Prohibitionists uniquely catered to German-Americans in their propaganda, when Prohibitionists in other parts of the country instead targeted Germans negatively. This peculiarity of Wisconsin prohibition helps elucidate the local and regional differences present in the largely-grassroots Prohibition movement.

Bolda, Claire

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Physics/Astronomy

Author/Contributors:
Claire Bolda *Zhihui Li* *Dawn Erb*
Charles Steidel *Yuguang Chen*

Abstract Name: How Did Galaxies in the Early Universe Grow?

Whereas nearby galaxies primarily grow by merging with other galaxies, cosmological simulations predict that galaxies in the distant, early universe mainly obtained fuel for new star formation by accreting gas from their environments. Galaxy growth can be observed due to star formation within a galaxy, which produces Lyman-α (Lyα) photons that illuminate extended halos of hydrogen gas, called Lyα halos, surrounding galaxies and flowing either towards or away from galaxies. Here we present observations of the Lyα halos surrounding a galaxy pair within a large-scale structure of galaxies in the early universe using the Keck Cosmic Web Imager (KCWI), an integral field spectrograph on the Keck II Telescope. The Lyα emission profiles in the spectra from these galaxies' Lyα halos exhibit indications that gas is flowing into the galaxy pair, which is rarely observed among galaxies in the early universe, rendering them excellent tools to study galaxy growth during this era. We find that the galaxies in this pair are quite close to one another, which implies that gas may be flowing into them as the result of a merger. However, these galaxies' Lyα halos are aligned with a nearby filament of galaxies, which suggests that they may be accreting gas from narrow streams of gas flowing along this filament. In order to determine the source of inflowing gas more precisely, we measured the spatially varying peak flux ratio and peak separation of the double peaked Lyα profiles throughout the galaxy pair's Lyα halos. Additionally, we fit these Lyα profiles against a Monte Carlo Radiative Transfer model which assumes that the galaxy pair's Lyα halos consist of a clumpy, multiphase gaseous medium with radially varying velocity. By investigating the source of inflowing gas in this galaxy pair, we aim to provide valuable insight into galaxy growth in the early universe.

Bolton, Marie

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Marie Bolton,
Hua Bai

Abstract Name: **The Impact of Oxidative Stress on Peroxisome and Mitochondrial Function in Drosophila**

Damaged mitochondria are repaired and recycled through the mechanisms of mitochondrial dynamics in response to stress; this helps in restoring cellular homeostasis. Mitochondrial dynamics have emerged as a novel regulator of aging in recent years. Researchers have performed genetic manipulations of genes involved in the fission and fusion of mitochondria, which extended the lifespan. However, the causes of the age-dependent alteration in mitochondrial dynamics remain unanswered. Our focus is to explore the involvement of the peroxisome in maintaining mitochondrial homeostasis during animal aging. In particular, we investigated the impact of oxidative stress on the transcriptional regulation of Gnpat (Glyceronephosphate O-acyltransferase), the key enzyme involved in peroxisomal plasmalogen synthesis. Plasmalogens are found in cell membranes throughout the body and help protect cells from oxidative stress. Studies have shown that plasmalogen is abundant in mitochondria and its levels decline with age. Gnpat provides instructions for making the plasmalogen enzyme and plays a role in protecting cells, particularly mitochondria, from oxidative stress. Our studies have found that oxidative stress induced Gnpat mRNA expression and this induction was specific to Gnpat rather than a widespread peroxisome gene induction. Although we understood how Gnpat was controlled at the translational level there was an unanswered question of the upstream regulators that control it. Through recent studies, we have shown that ATF4/crc transcription factor is required for the induction of Gnpat expression under oxidative stress. Thus, our future goal is to understand how peroxisomal plasmalogen synthesis pathways contribute to age-related alterations of mitochondrial functions.

Bond, Marty

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Chemistry/Materials Science

Author/Contributors:
Ella Mack,
Marty Bond,
Dong Hun Lee,
Sunghwan Lee,
Sujat Sen

Abstract Name: **Nanoporous Bi-layer Structures for the Electrochemical Conversion of Carbon Dioxide to value-added chemicals**

Prior research has shown that alloys of copper (Cu) with metals such as silver (Ag) or tin (Sn) have the ability to catalytically convert Carbon Dioxide (CO2) into economically useful products such as ethylene, methane or formate. Varying the particle size, surface morphology, texture, porosity and composition of these catalysts have been shown to dramatically change its electrocatalytic properties.However, these studies have been limited to the use of conventional liquid-phase reactors, which severely limits the rate of conversion, as determined by current densities of ~10 mA/cm2. Furthermore, translation of this catalytic performance to industrially relevant scales is not trivial, and is known to be highly sensitive to the local reaction environment, which in turn changes as a function of reaction rate.In this current work, we utilize dc/rf magnetron sputtering to deposit thin layers of copper, silver and specific combinations of the same on both stainless steel and gas-diffusion layer (GDL) substrates. Detailed characterization of these bi-layer thin films has been done through X-ray diffraction, Scanning electron Microscopy (SEM) as well as Energy-dispersive X-ray (EDX) analysis to determine relative ratios of the metals present, as well as changes in texture and porosity. Herein, we present on preliminary results showing the electrocatalytic performance of these thin films for the conversion of CO2 inside both liquid-fed conventional H-Cell reactors, as well as gas-fed flow reactors.

Bondzie, Michelle

Institution: ***FL - University of Central Florida***

Discipline: English/Linguistics

Author/Contributors:
Michelle Bondzie

Abstract Name: Unmoored: Capturing Identity, Change, and Executive Dysfunction on Film

Many ofthe shifts in our identity are as surprising as they are inevitable. As with our bodies and our minds, it's easy to forget that our identities are in a constant state of change — that is, until a situation forces us to face ourselves and examine who we've become. For adolescents, college students included, reckonings with their sense of self come frequently; they feel seismic each time they occur. My undergraduate thesis incorporates a short screenplay in which the central character is recovering from severe executive dysfunction, the impairment of basic skills that include working memory, mental flexibility, and inhibitory control. She confronts the question at the heart of the Ship of Theseus: have I changed enough that I am now an entirely different person than I used to be? And if so, what now?As part of the story development process, I examined the science behind executive dysfunction and the philosophical questions surrounding identity. I also viewed films that told compelling stories about the impact physical changes can have on one's identity. My screenplay explores the ability of a change in mental health to do the same. I am currently in pre-production preparing to turn my screenplay into a short film and anticipate that I will have a finished draft of the film by the time of the conference.

Bonilla, Estrella

Institution: ***CA - University of California - Merced***

Discipline: Sociology

Author/Contributors:
Estrella Bonilla,
Amanda Mireles

Abstract Name: Examining the anxiety derived from statistics: An analysis on blended learning as an effective statistic teaching methodology

For decades sociologists have long been intrigued as to why undergraduate students hold negative perceptions and anxiety towards courses requiring a heavy quantitative curriculum. Prior research suggests blended learning may ease anxiety, promote motivation, and empower students. Existing research in this area has been limited, as it has focused primarily on predominantly white institutions (PWI). To date, we have limited understanding of whether andhow blended learning can improve student confidence and ease statistical anxiety among low-income and first-generation undergraduate communities. In this project, I focus on conducting an extensive review of new literature to identify the effectiveness of blended learning in statistical courses and the current quantitative literacy gap among first-generation and sociology undergraduate students. The review reveals students who were assigned blended learning experienced significant increases in confidence, decreased anxiety, and improved overall quantitative comprehension. These preliminary findings from the literature suggest that blended learning is not only an asset to statistics teaching but additionally a useful method for increasing students' quantitative confidence, potentially empowering students to pursue careers requiring heavier quantitative skill sets. Overall, this preliminary analysis demonstrates a vital need forfurther research on the potential benefits of embedding blended learning methodologies in courses designed to be taught at institutions with a growing number of first-generation collegestudents.

Bonner, Curdajah

Institution: *AL - University of Alabama at Birmingham*

Discipline: Sociology

Author/Contributors:
Myles Moody,
Curdajah Bonner

Abstract Name: **The Social Distribution of Direct and Indirect Exposure to Major Discrimination among Black Adults**

While there have been efforts to understand the relationship between health and discrimination, the ideology of this study has been limited to perceived discrimination. Additionally, studies have proven to lack information regarding the racial discrimination's significant impact on both people and their loved ones through secondhand exposure. This study conceptualizes race-related stress framework by Harrell that concluded the inclusion of vicarious experiences is critical in understanding the effect of racism. Within group differences were analyzed to improve our understanding of certain racial health inequities, such as the "race paradox". Data were taken from the Nashville Stress and Health Study which is a random sample (N=1252)consisting of 627 Black adults. Those who participated in the study resided within Davidson County, Tennessee. This area includes two large historically Black universities (Fisk and Tennessee State) along with the country's oldest historically Black medical school (Meharry Medical College). To capture the entire racial discrimination experience, personal experiences of major discrimination, and vicarious experiences of major discrimination (i.e., spousal, child, and close friend) were assessed. We found that the women had lower odds of reporting personally experienced major discrimination than the men in the sample. Additionally, respondents in the sample who had greater social support from friends had higher odds of reporting vicarious discrimination experiences, which offers partial evidence for the study's hypotheses. From the conclusions of this study, further research should examine how Black women may be disproportionately exposed to secondhand discrimination as a result of their social roles as caregivers.

Boots, Jared

Institution: *MN - University of Minnesota - Duluth*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jared Boots *Ryan Hjelle* *Robert Lloyd*

Abstract Name: **Roles of Social Dominance and Empathy to Predict Theory of Mind**

Emotional intelligence is defined as the ability to identify and manage one's own emotions, as well as the emotions of others and Theory of Mind (ToM) is defined as a person's ability to reason with and predict another's emotions. Current research states that Emotional Intelligence and ToM are highly related and said to be, "conceptually-linked but distinct constructs." Empathy plays a crucial role in ToM as they both are dependent on understanding what another person is feeling. Empathy is a key part of emotional intelligence that some scholars believe is critical in an effective leader. For social dominance there is little literature on social dominance as related to theory of mind.
We hypothesize that ToM could be predicted by Social Dominance and Empathy while controlling for personality and measures of femininity/masculinity. Secondly, we hypothesize that for those low in empathy there would be a positive relationship between Social Dominance and ToM. Additionally, for those high in empathy there would be a negative correlation between social dominance and ToM.
A regression analysis was conducted to test our first hypothesis' model. Our model was not found to be significantly predictive ($p > .05$). Regarding the second hypothesis, we found partial support. We did find a significant negative correlation between social dominance and ToM for those with high empathy scores (i.e., those with scores one standard deviation above the sample mean or higher): $r = -.633$, $n = 10$, $p = .049$, two tails. However, we also found a trend towards a significant negative correlation between social dominance and ToM for those with low empathy scores: $r = -.581$, $n = 8$, $p = .131$, two tails. This research provides insight into the relationship between ToM, empathy, and social dominance which will allow us to generate further measures for people's emotional intelligence levels.

Borchardt, Jessica

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Music

Author/Contributors:
Jessica Borchardt,
Lilia Hazlett,
Haley Herem

Abstract Name: Mozart Basset Horn Trio

The UWEC Clarinet Trio has prepared a performance of Divertimento No. 3, K. 229 (439b) by Wolfgang Amadeus Mozart. Although this work was originally composed for basset horns (a member of the clarinet family with a lower, rounder tone),we will beperforming this piece on the modern standard: B-flat clarinets. This five-movement work opens and closes with fast movements (the Allegro and Rondo). The middle movements are two medium-fast Menuettos, and one slower movement (Adagio). Overall, the work is light-hearted with the Adagio providing a more thoughtful character and tone. Throughout our time rehearsing as an ensemble, we have learned many things about the history of this music and the Classical style. Mozart was considered to play a big part in forming a new musical era known as the Classical Era. His groundbreaking style of composing was unique because it used a newer homophonic sound rather than polyphonic texture. Divertimen to No. 3 is homophonic, meaning it has a melody and an accompaniment. In this work, each movement illustrates a different moodvia varying harmonies that are supplemental to the melody, which is usually played by the first clarinetist. The articulations and dynamics assist in portraying the emotions of the piece. We have chosen to switch parts toallow each member of the ensemble to lead and also play the supporting parts. This is important for each member to show their take on the piece.

Borchert, Tina

Institution: ***PA - Millersville University***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Tina Borchert

Abstract Name: The Self in Rugs

Textiles have always interested me. The labored, slow process of knitting and crocheting fell short of my expectations in regards to the time it takes to get a sizeable result. Several hours of work only yielded several inches of material. As I sought larger, more graphic textiles with dimensions of texture, I turned to rug making to achieve those aesthetic goals.
A rug can range in size from a handheld piece to a large wall hanging. Rather than looking at rugs as mass produced, domestic decoration, I looked to the history of textiles as an art form. The domestic decoration of rugs however, has influeneced people to easily recognize a rug. They have also become large staple items in peoples homes. This contemporary influence also interests me. In this project, I revisited an oil painting series on “The Self” and intertwined it with the medium of rug making. Battling a new medium presented many difficulties. Translating form from oil painting to rug textiles was the main struggle. I turned to artists such as Caroline Kaufman, whose works originally inspired me to make rugs, and Keith Harring for his bold, flat colors. I switched mindsets for this project and began with a master copy piece. This helped me form an eye for what translated well, visually, in rug making. As this new process began to click, skills were built up in a new textile medium. I am continuing to make pieces relating to The Self that will be presented at my Senior Thesis show in Spring 2023.

Borders, Rhys

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Art/Music History

Author/Contributors:
Rhys Borders

Abstract Name: **En Attendant: Digitizing Early 19th Century Advertisements of the Emerging New Orleans Theatre Scene**

After the Louisiana Purchase, New Orleans underwent rapid and complex growth from a strategic French colonial port to an early, multicultural metropolis. While there has been ample research on French theatre in France, theatre in early 19th century New Orleans has yet to be explored. As a French-established city, theatre was central to the culture of its inhabitants, guaranteeing its representation in the media of the time. Via web-based data visualization, this research exhibits the evolution of New Orleans theatre during the early Federal period through advertisements from the newspaper Le Moniteur de la Louisiane. As the advertisements reorganized and expanded over time, we altered the expression of entries in the database to better represent the information provided. For this presentation, I will address the database we created to organize the advertisements found in Le Moniteur de la Louisiane, as well as the rationale and challenges behind the decision to create a web-based calendar as the public interface for the data. This archive intends to spur further research; topics such as data analysis on trends in the expression of issued information or comparisons to the advertised theatre details of France and other French colonies will be aided by this application.

Bordwell, Brennen

Institution: *MN - Minnesota State University - Moorhead*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Dustin Bloodgood *Bridgett Grosz* *Brennen Bordwell* *Xavier Castro*

Abstract Name: **XRF Analysis of Pb Concentrations in Soils in and near Moorhead, MN**

Prior to its ban in 1996, leaded gasoline was available for use in all vehicles. We suspected there was an increased concentration of lead in the soil near Highway 10 near Moorhead Minnesota. The purpose of this experiment is to determine the impact of anthropogenic lead in soil.We collected 6 urban soil samples within Moorhead along parks, residential areas, and our college campus. We collected 18 rural soil samples east of Moorhead along highway 10 including two perpendicular transects to highway 10. A transect 1 mile, and a transect 7 miles east from Moorhead going North and South respectively. We collected both surface samples and samples approximately 6 to 12 inches in depth.We analyzed the samples by drying the samples at 100°-105°C for 18-19 hours. Using an agate mortar and pestle, we ground the samples to a powder. A Hitachi X-Met8000 Handheld-analyzer was used to analyze the elemental composition of the samples. We aimed to determine correlations in lead levels.Pb concentrations in urban areas ranged from 17 to 175 ppm. Rural variations showed a decrease in lead concentrations eastward along Highway 10 as well as a decrease away from highway 10 for the transect taken 1 mile from town. In rural and urban samples, we observed Pb statistically significantly decreased with depth.Our results show a trend in lead concentration with location and depth consistent with air-deposited lead from leaded gasoline. Although, regions with no obvious anthropogenic lead were decreasing in Pb levels relating to depth, as well. This suggests that soil genesis processes may also be a factor in the Pb concentrations, and warrants further research. Although most samples remained under the 100 ppm EPA guidelines for residential gardens, 2 urban samples taken along a major street exceeded this value.

Boshra, Paola

Institution: *CA - California State University - San Bernardino*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Paola Boshra,
Monserratt Garcia

Abstract Name: **The Development of Inhibitors used to Target Falcilysin (FLN) in the Human Parasite, Plasmodium falciparum**

There are five species of parasites that are involved in malarial infection: P.knowlesi, P.malariae, P.ovale, P.vivax, and P.falciparum. The human parasite Plasmodium falciparum causes the most severe case of malaria and is common in the Sub-saharan region of Africa and South Asia. Our study focuses on developing inhibitors against falcilysin (FLN), and metalloprotease expressed by the parasite during infection of the human host. Selective chemical inhibition is a valuable tool for understanding the biological role of falcilysin. Our group previously reported the development of potent FLN inhibitors using a piperazine-derived hydroxamic acid scaffold. This study focuses on optimizing the N1 and N4 substituents of the piperazine ring. Synthetically accessible candidate structures were DOCKed against the FLN crystal structure, and a subset of 20 promising compounds were selected for synthesis and testing against FLN and cultured P. falciparum. These studies revealed that a variety of bulky aromatic groups were tolerated at the N1 and N4 positions of the piperazine core. Introduction of naphthalene, dibenzofuran, and various substituted benzene rings resulted in improved potency relative to the previous lead compound. Notably, we also observed a correlation between the binding affinity predicted in our DOCKing studies and biochemical inhibition FLN, indicating that virtual screening is likely to be an effective tool for optimization of this scaffold against FLN.

Bostley, Delainey

Institution: *MA - Bridgewater State University*

Discipline: History

Author/Contributors:
Delainey Bostley

Abstract Name: **From Massachusetts to Ravensbrück: Betty Laurie, the United States, and the Holocaust**

The United States has taken a large responsibility in regards to the remembrance of the Holocaust and World War II, yet how the country remembers the event is fairly narrow. Despite both the war and the Holocaust being a transnational event, remembrance in the U.S. is focused on American triumphs. It ignores elements that give insight into the overall understanding of the events. Why is that? The life and story of Betty Laurie provide insight into the answer. Born in 1892 in Scotland, she immigrated to the U.S. and became a citizen of Mansfield, Massachusetts, where she remained throughout childhood. In the late 1920's, she married into the French aristocracy and became the Countess Roberta de Mauduit. Years later, with the outbreak of World War II and the Nazi invasion of France, Betty was taken prisoner and sent to the Ravensbrück concentration camp. Betty is not a victim of the Holocaust, however the horrors and brutalities she experienced in captivity were similar to that of one. Which is why she is a crucial part to the overall understanding of public memory in the U.S. She transcends nationalities and borders. Betty is a key component to the overall understanding of the Holocaust and how it is remembered today. This project relies on analysis of secondary works on the subject, key institutions relating to the Holocaust in the U.S., as well as analysis of primary sources from the United States Holocaust Memorial Museum's Archives and the University of Michigan's Special Collections and Archives. The importance of this research is crucial to the understanding of the Holocaust as it is already known. The intent is to provide a deeper understanding of the Holocaust, examine the complications and limitations that leave out vital information, and expand public memory overall.

Boucher, Mary

Institution: ***SC - Furman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Mary Boucher

Abstract Name: Defining The Integrated Self Through Shakespearean Drama

The balance between internal and external pressures on the mind and body have been an important part of our understanding of how the mind works throughout history. The mind and body, or the “self,” can be integrated (in agreement) or disintegrated (not in agreement), causing physical and mental ills. Though they describe it differently, both early modern medical philosophy and modern psychology can be used to describe the changes made in characters’ sense of self in Shakespeare plays. The plots of several of his plays are guided by internal and external pressure on the characters’ sense of self, causing a disconnect between the mind and the body, which drives the disintegration of their self-concept. This propels the plot for Shakespeare's tragedies, but also for his comedies. In both genres, the characters sense of self is threatened by some external factor, such as other people, witches, or natural events, and they begin to struggle with their sense of self. Two characters that begin well integrated and are then disintegrated are the characters in Macbeth and Othello, who experience near total disintegration of their sense of self. Viola fromTwelfth Night is an interesting contrast because her expected full disintegration does not fully occur due to her brother’s return, which puts each character back into their proper identity. Viola’s mental strength, near disintegration of her sense of self, and comedic re-integration shows the difference in how characters are treated in different genres.Whether they are in Shakespeare’s tragedies or comedies, these characters’ integration and disintegration of their sense of self,as described by both early modern medical philosophy and modern psychology, are important aspects of their understanding of themselves and the social setting in which they live.

Bourget, Elena

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Rakib Islam

Abstract Name: On the Effectiveness of Augmented Data Generation of Brain Tumors Using GAN based Techniques

Deep learning models have shown promising results in the computer-assisted diagnosis of brain tumors from images. The training data should be sufficient with high quality and generalized characteristics to train the deep learning models accurately. However, in the medical domain, the training data is limited, as it is difficult to collect sufficient patient data because of the problem of patient recruitment, the burden of annotation of lesions by experts, and the invasion of patients’ privacy.Researchers have developed different automated Data Augmentation (DA) techniques, such as scaling, cropping, flipping, and Affine transformation, to overcome the problem of limited data for training. Recently, Generative Adversarial Network (GAN) based DA techniques, such as TumorGAN, PCCGANs, and CPGGANs, have shown improved results in generating augmented data. However, the evaluations of the existing GAN-based DA techniques can be questioned as the experiments were conducted either on small-sized datasets or included only some of the available datasets. In this study, we conduct a rigorous investigation to determine the effectiveness of the GAN-based DA techniques by applying those in all the available Magnetic resonance imaging (MRI) datasets.

Bowe, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Grace Bowe,
Sydney Rae,
Brittney Winter

Abstract Name: **A Comparison of Alluvial Fills in Former Glacial Meltwater Stream Valleys in West-Central Wisconsin**

The Lower Chippewa River (LCR), a tributary to the Upper Mississippi River (UMR) in west-central Wisconsin, drained meltwater from the Chippewa Lobe of the Laurentide Ice Sheet and filled its valley with glacial outwash ca. 30 to 15,000 years ago. Then, as the region deglaciated, the UMR incised abruptly, initiating a wave of incision that progressed up the LCR in a prolonged and episodic manner (Faulkner et al. 2016). For this study, we examined the LCR's two largest tributaries, the Eau Claire River (ECR) and the Red Cedar River (RCR), as part of an ongoing project to determine how incision propagated through the entire LCR fluvial system and to identify what controlled the incision process. The specific objective of our research was to ascertain the sedimentological characteristics of the alluvial fills in each river valley in order to determine if the fills are similar (as expected, given that both were meltwater streams that drained the Chippewa Lobe) or different. We accomplished this objective by kayaking each river, mapping the location of terrace cutbanks, and describing the alluvium exposed in them. Contrary to what we expected, we found the fills in the two valleys to be clearly different. While both are characterized by tabular cross beds of medium-to-coarse sand with rare gravel, along with planar interbeds of gravelly sand, gravelly sand interbeds are generally more common—and gravel-size clasts typically larger—in the RCR valley. We are uncertain why the RCR fills are coarser. One hypothesis is that the RCR was the larger meltwater river and able to transport coarser material away from the ice margin. Whatever the explanation, the differences in valley-fill sedimentology may have influenced the process of incision as it propagated up each valley. Future research should take these differences into consideration.

Bowe, Megan

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: **Minority Status and Mental Health**

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Bowe-Hanson, Gabi

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Melissa Knopps,
Josie Jacobson,
Agnes Buttke,
Gabi Bowe-Hanson,
Gracie Hering

Abstract Name: Expressions of Cultural Identities

How might expressions of cultural identities take shape through language, stories, and other learning experiences in an elementary classroom? If preservice educators listen intentionally to the expressions of elementary students, will those studentsshare about their diverse backgrounds and cultural identities? Can these conversations support the classroom in an effort to be more culturally responsive? We will partner with a local elementary school and spendtime on site conferring withs tudents about their perceptions and contributions, connecting students' cultural knowledge to themselves and others through multimodal learning experiences, and gather data that will influencefuture teaching practices. Multimodal instruction is instruction that uses social and cultural resources such as drawings, technology resources, picture books, and storytelling. Student voice is listening attentively to students' perceptions and contributions.Cultural identity is the perception of self and others, and how children see themselves as a member of a group.

Bowles, Caleb

Institution: ***IN - Indiana State University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Justin Vangilder *Caleb Bowles* *Jeffery Buell*
Christian Herron *Isabella Leon* *Mackenzie Michael*
Lillian Moehring *Sophia Rashid* *Carter Ritzheimer*
Sandra Xique *Jennifer Latimer*

Abstract Name: Investigating the use of crayfish as environmental water quality sentinels for metal pollution in Indiana creeks

Ephemeral creeks and streams can be difficult to monitor and assess for water quality. Unfortunately, these same water systems can play a significant role in the input of metals and other pollutants into major waterways. Metals are often the result of nonpoint source or historic point source pollution that is no longer active, making assessment and exposure prevention difficult. An economical and reliable approach to determine water quality in these areas would be the use of reliable sentinel species that are endemic, easily identified, and respond in a quantifiably way to metals in the environment. Macroinvertebrate assemblages have been historically used to create comprehensive biotic indexes, but these indices can be complicated, seasonal, and difficult to assess without identification bias. For this project, crayfish samples, water samples, and sediment samples were collected in several creeks in Indiana representing a variety of environmental exposures. We hypothesized that because are omnivores and biotic engineers, their environmental interactions place them in a unique niche making them a reliable sentinel species. By testing and comparing the bioaccumulation of metals in crayfish tissue, water, and sediments to dominant species, average crayfish size, and population density, we can reliably predict creek health for metals. Our results determined thatFaxonius rusticus(rusty crayfish) were found in creeks with higher environmental metals. Also, crayfish cephalothorax measurements were smaller in higher metal environments. This data, along with metal bioaccumulation and biomagnification make crayfish an excellent sentinel for water quality in creeks.

Bowman, Paige

Institution: *WI - Milwaukee School of Engineering*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Paige Bowman,
Wujie Zhang

Abstract Name: **Green Synthesis of Palladium Nanoparticles Using Upland Cress: Synthesis and Characterization**

As research for the uses and applications of metallic nanoparticles (NPs) grows, the demand for more environmentally conscious, or “green” synthesis methods also grows. Chemical synthesis for gold, silver, and other metallic nanoparticles including metallic alloys, has been successful, however the process is costly and uses compounds that are dangerous to the environment. Previously, gold and silver nanoparticles have been successfully synthesized using upland cress (Barbarea verna). This research further explores the use of upland cress in synthesizing other metallic nanoparticles. Upland cress is rich in biomolecules that act as both reducing agents that can reduce metallic ions into nonionic metallic atoms, and capping agents which stabilize the nanoparticle. Palladium nanoparticles were synthesized and characterized using Ultraviolet-Visible spectroscopy. Based on the UV-Vis graphs, the initial solution had a peak at 438 nm – characteristic of Pd2+ ions, which disappeared as the synthesis process progressed. The absorbance intensity increased from a 0.456 Abs from nanoparticles synthesized at 2 hours at 300 nm to 1.56 Abs from nanoparticles synthesized at 6 hours at 300 nm, which indicates an increase in the amount of Pd NPs present in the solution. Upland Cress has been successfully used to synthesize gold, silver, and now, palladium nanoparticles.
Keywords: Palladium nanoparticles, Green synthesis, Upland cress

Boyce, Nathan

Institution: *KY - University of Kentucky*

Discipline: Biology

Author/Contributors:
Nathan Boyce *Sara Y. Ngo Tenlep* *Olivia Lawrence*
Obadah Tolaymat *Madeline Oakley,* *Hollie I. Swanson, Ph.D.*
Kevin J. Pearson, Ph.D.

Abstract Name: **Offspring Exercise Does Not Protect Against Detrimental Health Outcomes Associated with Maternal PCB126 Exposure in a Mouse Model**

Polychlorinated biphenyls (PCBs) are persistent organic pollutants that negatively affect offspring glucose homeostasis and body composition when mice are exposed in utero. This experiment aimed to test whether voluntary exercise in the offspring can be used as an intervention to protect against obesity and diabetes associated with perinatal PCB exposure in mice. Sixty female ICR mice were equally divided into two experimental groups: Vehicle Control or PCB. The female mice were exposed to vehicle or PCB once before pregnancy, once during pregnancy, and once during nursing. The offspring were weaned at three weeks. At six weeks of age, the male and female offspring were housed singly in cages that contained either no running wheel or a voluntary running wheel. The running distance was monitored daily, and body weights were collected bi-weekly. Body composition and glucose tolerance were assessed after three months of running wheel availability. We found that perinatal PCB exposure significantly reduced the body weight of both male and female adult offspring, and the reduction was caused by a significant decrease in lean mass ($p<0.01$). Exercise induced a further decrease in body weight, but this was driven by a loss of fat mass ($p<0.05$) rather than lean mass ($p>0.3$). In this experiment, PCBs did not consistently affect glucose tolerance, but exercise did improve glucose disposal two hours after the glucose challenge in both male and female offspring ($p<0.05$). While there were numerous significant main effects of PCB exposure and exercise, there were no meaningful interactions between them. Thus, exercise did not effectively ameliorate adverse outcomes associated with perinatal PCB exposure. These data suggest that exercise during adulthood is an effective way to improve health. Still, it may not specifically protect against PCB exposures that occur during fetal and early postnatal development.

Brabec, Levi

Institution: *KS - University of Kansas*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Levi Brabec

Abstract Name: **Meil yra Visiems: The Evolution of Pride in Lithuania**

Baltic Pride started in 2010 with tremendous political and public opposition but is now a vibrant celebration and protest for the LGBTQ+ community in Lithuania. This project will explore the evolution of Pride, one of Lithuania's most important LGBTQ+ advocacy events, from 2010-2019. According to scholars studying Pride in Eastern Europe, a variety of political and social factors from European Union association to nationalism affect Pride's successful dissemination of rights. This project will add to this body of work by examining the growth of Pride in Lithuania despite continuing opposition in eastern Europe and around the world. Examination of the European International Lesbian, Gay, Bisexual, Trans, and Intersex Association's (ILGA) annual review, images from each year of Baltic Pride in Lithuania, and local news articles covering the event each year provide data to illustrate Pride and the social and political context of Lithuania. This project will use content analysis and thematic coding of ILGA Europe's annual review and news articles and images of each Baltic Pride to determine then compare themes in each data source from 2010 to 2019. Comparing themes over time in Baltic Pride and the political and social atmosphere in Lithuania may reveal legitimization of sexual minorities' right to assembly and growing representation of multiple gender identities. Researching change in Lithuanian Baltic Pride will initiate discovering the efficacy of this event in expanding LGBTQ+ rights and visibility.

Bradford, Morgan

Institution: *WI - University of Wisconsin-Platteville*

Discipline: **Biology**

Author/Contributors:
Dondi Stender *Jagger Mess* *Morgan Bradford*

Abstract Name: **Freshwater Mussel Surveys of Southwest Wisconsin**

Freshwater mussels are essential to our ecosystems by enriching the rivers and lakes. Their prevalence throughout Wisconsin has been a scarcely researched topic throughout the years, but the trends of their abundance have begun to emerge. This field however is experiencing renewed scientific interest due to a recent statewide survey conducted by the Wisconsin Department of Natural Resources. These studies have shown the health of northern Wisconsin mussels' communities to be thriving, particularly following rehabilitation efforts in water bodies like the Fox River. Unfortunately, studies in the southeastern part of the state show the opposite results. While there is a myriad of survey results and data from these regions, there is a lack of evidence to show the status of freshwater mussels in Southwest Wisconsin. The previously believed notion was that the populations of the southwestern regions of the state would mirror those of the southeast, particularly given the agricultural activities in the region. However, after extensive surveying of watersheds in the counties of Grant, Iowa, and Lafayette; our evidence shows their presence in select streams of the region, despite being undetected in years prior. Our team explored the factors that were contributing to this inconsistency with our counterparts in the southeast, particularly given that the distribution was patchy. The correlation of factors such as physical, biological, and chemical components was taken into consideration as possible causes of presence or absence. The findings made it apparent that the freshwater mussels were abundant in certain areas of the region but not others. The research we conducted has helped contribute to the baseline knowledgebase of freshwater mussels throughout the state and assisted in providing data for an otherwise largely unstudied region of Wisconsin.

Brady, Hunter

Institution: *TN - Middle Tennessee State University*

Discipline: Biology

Author/Contributors:
Hunter Brady,
Anthony Newsome

Abstract Name: **Chlorine Dioxide Gas as an Antiviral Agent: Development, Optimization, and Application, of an Antiviral Assay based on the MS2 Bacteriophage**

Since the emergence of the SARS-CoV-2 virus, the need to identify antiviral agents for disinfection purposes has dramatically increased. Chlorine dioxide gas has previously been identified as an antibacterial agent with strong oxidizing capabilities. Additionally, the MS2 bacteriophage has been recognized as a suitable surrogate for developing and applying virucide decontamination methods. This study aimed to identify and assess the antiviral properties of chlorine dioxide gas based on the MS2 bacteriophage model system using a double-layer agar plaque assay. Results showed that the MS2 bacteriophage can be incorporated and recovered from porous (cloth coupons) and non-porous (steel coupons) surfaces and that its recovery can be diminished or eliminated based upon feasible (less than 20ppm of gas) ClO2 gas exposure parameters. These results support the potential use of ClO2 gas for both current and unforeseen future viral disinfection needs.

Bramley, Amy

Institution: *IL - Augustana College*

Discipline: Communication Science and Disorders

Author/Contributors:
Amy Bramley,
Ann Perreau

Abstract Name: **Development and Validation of the Pediatric Spatial Hearing Questionnaire (P-SHQ)**

Sound localization is an important auditory function that is difficult for children with hearing loss. Research indicates that children with hearing loss using hearing aids and cochlear implants have problems localizing sound compared to children with normal hearing.Spatial hearing questionnaires are reliable, valid, and sensitive to differences between adults with hearing loss and normal hearing. However, few studies concentrate on children. It is important that we focus on children, as spatial hearing is necessary for good awareness in their environment (e.g., locating a parent's voices) and for learning in a classroom setting. The purpose of this study was to develop and validate a pediatric version of the Spatial Hearing Questionnaire (P-SHQ). We developed the 24-item P-SHQ from the existing Spatial Hearing Questionnaire by modifying several items to be appropriate for children. We recruited parents and guardians of children with normal hearing and children with hearing loss from kindergarten to 8th grade to complete the questionnaire. The P-SHQ was administered as an online survey along with an 18-item demographic questionnaire. In total, 59 parents and grandparents of children with normal hearing and 9 children with hearing loss completed the questionnaire. For the children with hearing loss, 6/9 had bilateral hearing loss and 6/9 used hearing aids or a hearing aid plus a cochlear implant. The highest ratings on the P-SHQ were for items on speech perception in quiet and lowest ratings for sound localization and speech in noise. P-SHQ total scores were significantly lower for the children with hearing loss compared to the children with normal hearing. Comparing responses to adults, we found consistent responses on the SHQ for children. These results suggest that the P-SHQ is a valid and sensitive tool in determining localization and speech in noise performance for children.

Branchaw, Janet

Institution: ***WI - University of Wisconsin-Madison***

Discipline: FAN Abstract

Author/Contributors:
Janet Branchaw *Megan Novak Wood* *Amanda Butz*
Peter Civetta

Abstract Name: Entering Research for the Humanities and a Curriculum Development Institute for Program Directors

The Entering Research (ER) portfolio of resources includes nearly 100 active learning activities that have been piloted tested nationally with STEM students, and a learning assessment instrument, the Entering Research Learning Assessment (ERLA), for which evidence of validity has been published. An overview of these evidence-based resources and several new ER activities designed specifically for students doing individualistic research in the Humanities and other disciplines will be presented in this session. In addition, an overview of the ER Curriculum Development Institute, which is offered by the Center for the Improvement of Mentored Experiences in Research (CIMER), will be given. All ER resources are organized by a conceptual framework of seven areas of research trainee development: Research Comprehension & Communication Skills, Practical Research Skills, Research Ethics, Researcher Identity, Researcher Confidence & Independence, Equity & Inclusion Awareness & Skills, and Professional & Career Development Skills. Adaptation and development of new ER activities for undergraduate researchers in the Humanities is funded by a grant from the Arthur Vining Davis Foundation awarded to Northwestern University (NU). NU's Office of Undergraduate Research is collaborating with the University of Wisconsin – Madison's Wisconsin Institute for Science Education and Community Engagement (WISCIENCE) to develop and test the new activities. The activities and preliminary evidence of humanities student learning at NU will be presented, and attendees will be given information about participating in national pilot testing to gain early access to the new materials.
The ER Curriculum Development Institute guides research educators and training program directors to use a backward design process to develop research courses and training programs. In addition, participants develop learning assessment and course/program evaluation plans that align with their research trainee learning objectives and course/program goals, respectively. An overview of the institute, evaluation data supporting its effectiveness, and institute registration information will be presented.

Brandt, Jacob

Institution: ***NY - SUNY Brockport***

Discipline: Computer Science/Information Systems

Author/Contributors:
Jacob Brandt

Abstract Name: Script Focused Image Editor: Progrimage

Image editors (IE) are powerful tools but can be more difficult to work with than code for some specific tasks. IEs are great for art, but not always as good for precise image manipulation. This is where code-based editors are more effective. There are some image editors that support scripting, however, some IEs are complicated to use, with no available documentation. Others have scripting hidden within submenus making it difficult to find. Furthermore, some IE scripts have only one basic implementation where users must click a "run" button and lacks the use of tools and interactive filters. To achieve the goal of creating a scripting tool for image editing that will be user-friendly and accessible, this exploratory study examines: "How well can scripting be implemented in an image editing application when scripting is the main focus?"The objective of this study is to create an easy-to-use image editor that allows users to create scriptable tools and image filters without having to search for the ability to do so. The proposed IE application, Progrimage, uses a scripting language called Lua which was designed to be beginner-friendly. Progrimage is designed to have a dedicated button to create a tool and to create a filter that can be used for drawing and manipulating objects, processing image pixels, creating layers, and more. With this IE application, scripting has high priority.Applying a user centered design approach, Progrimage will allow users to create their own tools and filters and is intended to increase user satisfaction, and intensify learnability and user adoption.

Brandt, Michael

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Michael Brandt,
Scott Bailey-Hartsel

Abstract Name: **Unexpected effects of commercial beta-glucosidase addition to mash and fermenting beers**

Enzyme additives are widely used in both brewing and winemaking to improve color, ease of handling, flavor and stability. Beta-glucosidase has been featured in several commercial preparations with the intent of liberating flavorful terpene alcohols from their glycosides. In testing this principle on a Belgian-style farmhouse test brew with a POF+ yeast strain, we added the enzyme preparation, ABV Aromazyme™, 3 days into the fermentation stage as recommended by the manufacturer. We noted few major changes in terpene alcohols by GC/MS but a large increase in 4-vinyl guaiacol (4VG), a phenolic off flavor and ferulic acid derivative. An olfactory triangle test showed statistical significance (p=0.001) in 4VG aroma vs. the otherwise identical control. We used two different substrate assays and test brews to show that ABV Aromazyme™ contains significant ferulic acid esterase activity (FAE). While ferulic acid beta glucosides exist, our data shows they are unlikely to be the source. Test brews with POF- yeast strains showed a FA increase with no change in 4VG. In test mashes, ABV Aromazyme™ can release significantly higher levels of ferulic acid than controls (200-400%). Increases occurred at both 65ºC and 45ºC. After pitching, the released ferulic acid could then be further decarboxylated by POF+ yeast or bacteria into 4VG. On the mashing side, we showed that barley malts released more FA than wheat malt and significantly more than oats. This unexpected enzyme property need not be a sensory issue if POF- yeast strains are used. In fact, due to the “nutraceutical” value and antioxidant activity of FA, increased FA could be a positive feature promoting stability and nutritional value of the product. For styles featuring the 4VG aroma, ABV Aromazyme™ could be used to enhance flavor without resorting to separate ferulic acid rest temperature stage during mashing.

Brantner, Chris

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Mathematics**

Author/Contributors:
Peng Tan,
Chris Brantner

Abstract Name: **Codes from Fiber Products of Curves**

When we are storing many data across multiple devices, it is possible to lose some data. We explore a way that generates and stores the data effectively and efficiently; in other words, if we lose some data, we can use our other data to recover the lost information. We are using curves with many points over finite fields by using the fiber products of curves and evaluation codes to achieve this goal. To obtain an explicit multi-dimensional recovery structure, we use fiber products of curves with many points. The data we are encoding is that of polynomials of limited degrees, which are encoded using the evaluation at the points on the curve. We compute the minimum distance, length, and dimension of these codes to get a measure on their usefulness and practicality.

Brantner, Lauren

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Herman Cheah,
Lauren Brantner

Abstract Name: **Asynchronous Discussion Boards Through Text or Video: Does the Modality Affect a Student's Involvement and Interaction in a Course?**

Asynchronous discussion forums in both online and face-to-face courses provide an opportunity for interaction, collaborative problem-solving and hold potential for increased content mastery. While traditionally, these discussion forums occur via text-based postings, there has been an increase in technology and course design that allows for video-based discussions. For instance, a previousstudy concluded that students believed the asynchronous video discussion to have improved their social presence with their peers in the course. This study compares text-based vs. asynchronous video-based discussion forums within an anatomy and physiology of speech and hearing course, to better understand their respective values in supporting content understanding, connections, and relationships. Half of the class will complete discussions on each unit through text-based discussion only, while the other half will discuss through video postings. The groups will rotate the modality of discussion in every unit. In the video modality, the students will be replying to their group members' video posts with an additional video, without a limit on the number of replies. The same will apply to those assigned the text modality for that week, where the posts and replies will be in text form alone.Student submissions via each modality will be evaluated for their accuracy in addressing outcomes, their social presence and contributions in the group, and their perceptions of the design of the task. This is based on the Community of Inquiry (CoI) framework which analyzes the social, teaching, and cognitive presence involved in creating a purposeful educational experience. At the end of the experience, students will complete a survey outlined by the CoI framework to share their feedback and impressions of both modalities.

Breckbill, Abigail

Institution: *PA - Millersville University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Abigail Breckbill

Abstract Name: **What to Watch Instead of Eating: An Exploration of Anorexia in Film and the Proana Community**

The pro-anorexia, or "proana" movement, is a phenomenon that has grown online, predominantly among adolescent girls, to share and receive advice on disordered eating habits. Proana websites contain content known as "thinspiration," or "thinspo," which often includes walls of photos, lists of advice, and films for encouraging disordered habits and avoiding recovery. This study pulls from common lists of suggested proana viewing material to provide a critical analysis of the aspects which appeal to the anorexic audience. Its aim is two-fold: first to assess onscreen images and the underlying rhetoric within the narratives that may serve as "thinspiration," and second to examine the conflict between the intended general audience of these films and the proana audience that upholds them as guides and inspiration. The analysis focuses primarily on three films that often appear in these online spaces. Thinspiration and To the Bone are two films that portray the anorexic narrative as it is commonly culturally understood, following the descent of a young female protagonist into her disorder. The girls in these films engage in disordered behaviors on screen, visibly lose weight, and conceal their anorexia from those around them. What may serve as a cautionary tale to a general audience becomes a guidebook for those with anorexia. The third, Black Swan, is a mainstream film about a ballet dancer who has an obsession with control and perfection that ultimately destroys her. In contrast to the others, it does not explicitly depict anorexia but has both visuals and themes that make it a popular choice of viewing for the anorexic audience. Analysis of the content and themes of these filmis an exploration of what makes them so appealingto the anorexic audience and raises questions of how best to depict anorexia on screen.

Breeden, Kal

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kal Breeden *Britney Serafina* *Dylan Kostuch*,
Innisfree McKinnon *Nicole Hayes* *Keith Gilland*

Abstract Name: Long-Term Efficacy and Stability of Trout Stream Habitat Restoration in the Red Cedar River Watershed

The Red Cedar River watershed in western Wisconsin is a rural and agricultural watershed that is impaired as a result of nutrient and sediment runoff from multiple sources. Poor watershed land use practices lead to the contamination of small, local streams and are detrimental to the health of macroinvertebrates and fish populations such as trout. Efforts to improve the quality of these streams and restore trout fisheries include a 15-year history of restorations focusing on improving in-stream physical characteristics including flow rates, temperature, oxygenation, and habitat. However, on-the-ground testing of water quality and the impacts of the stream restorations is currently limited due to a lack of resources and personnel, making it hard for up-to-date data to be collected and analyzed. Little follow-up beyond project completion checks and occasional fish shocking surveys have taken place to monitor the ongoing success of these restoration projects. In the summer of 2022, researchers from UW-Stout conducted watershed-scale sampling to inform stakeholders about the efficacy of ongoing conservation projects and direct future monitoring for conservation and restoration projects. Data collected at each site included biotic index, streamflow, habitat assessment, width-to-depth ratios, turbidity, conductivity, pH, dissolved oxygen, and nutrient analysis. Comparing the conditions of older streams with new restoration projects shows changes in abiotic factors including channel morphology and substrate quality, as well as differences in biotic indices and the presence of desirable macroinvertebrate species. Continuing maintenance may be necessary to maintain the biological integrity of older trout stream restorations. Ongoing research into the long-term changes in abiotic and biotic indices following restoration provides insight into the efficacy of various restoration methods and illuminates new opportunities. Data on long-term restoration will provide insights into improvingnutrient issues across the entire watershed.

Breitbach, Victoria

Institution: ***IA - Wartburg College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Hidaly Hernandez,
Victoria Breitbach,
Maeve Dunne,
Natalie Paulson,
Samantha Larimer Bousquet

Abstract Name: The Effects of Voluntary Exercise on Memory and Anxiety in Young Adult Female C57BL/6 Mice

Exercise increases spatial memory and decreases anxiety. Physiological mechanisms are unknown, but a larger hippocampus can be associated with both of these outcomes. Nonspatial memory is not necessarily associated with the hippocampus, and thus may not similarly be increased by exercise. This study investigated the effect of three weeks of exercise on nonspatial memory and anxiety levels in young adult female C57BL/6 mice using the open field test (anxiety) and object recognition test (nonspatial memory). We hypothesized that mice in the exercise group would exhibit less anxiety-like behavior and would perform better on the nonspatial memory task compared to the sedentary group. Results showed that exercise did not change nonspatial memory and may have increased anxiety, contrary to the hypothesis. These findings may have been due to the tests used, so future studies could investigate other nonspatial memory and anxiety tests.

Brewer, Nevaeh

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Sociology

Author/Contributors:
Nevaeh Brewer *Pamela Forman* *Karen Mumford*
Ellen Mahaffy

Abstract Name: Equity and Sustainability as Community Drivers: Are We All on the Same Page?

The City of Eau Claire, a small city in Western Wisconsin, espouses the idea of becoming a “great city”; with equity and sustainability as two of the driving imperatives to move the city forward. Applying these imperatives may be challenging because the city is recovering from the effects of COVID-19, and will amass $97 million in debt by the end of 2022. In addition, community members, particularly in marginalized communities, are confronting inflation, a mounting housing crisis, and infringements upon health access and reproductive rights. If equity and sustainability are to lead the way in confronting these and future issues, do those working on the frontlines of our city share a common understanding of these imperatives? To address this question, we interviewed the leaders of over 30 Nonprofit Organizations (NPO) in Eau Claire to discuss their understanding of equity and sustainability, and the importance of these concepts within their organizations. We chose to interview leaders from NPOs because they provide services and resources that address important community needs. The NPOs in our sample represented a diversity of interests (mental health, food insecurity, racial justice, environmental, etc.), and a blend of organizational and decision-making structures; levels and types of staffing; and amounts of financial support.We utilized qualitative data analysis software (MAXQDA) to illuminate similarities and differences in conceptions of equity and sustainability. Preliminary findings from our interviews reveal that most NPOs focus on one, but rarely both of these principles. In addition, NPO leaders have differing conceptions of equity and sustainability. Findings from this study will be shared with the Eau Claire NPOcommunity and city staff. We hope to spark conversations and inform policy on how to apply the imperatives of equity and sustainability to strengthen the city of Eau Claire.

Bright, Corey

Institution: ***NY - SUNY Brockport***

Discipline: Computer Science/Information Systems

Author/Contributors:
Elijah Tay,
Corey Bright,
Tyler Brosius

Abstract Name: Efficacy of Student Mobile Health Application: The Case of SUNY Brockport

The importance of universities to provide mobile applications for students and faculty is becoming a growing trend since business operations, as well as academic activities, are affected using technology. Research published in 2021 says that the number of health-related applications in the Apple and Google Play stores has exceeded 97,000 with approximately 100 new applications being added per month. This indicates the potential for growth in the mobile health application market. For these reasons, it is important that the SUNY Brockport Health Center investigates the importance of designing a mobile application that can benefit students and the Brockport community at large. This study aims to determine the effectiveness of a health center application that students and faculty can use. With the changes in day-to-day life since the COVID-19 era, there has been an increasing need for mobile health applications. Designing a mobile application (MyHazen App) for the Brockport community could potentially provide students easier access to the services that the online portal provides, with a more user-centered design approach and improved capabilities. This study comprises four main phases: (1) Gathering user requirements through an institutional approvement, (2) Designing a high-fidelity prototype using Figma, (3) Developing a student-based mobile health (mHealth) applicationtool using Swift and XCode, and (4) Determining if students will adopt to the MyHazen application by conducting a usability testing for student user feedback through an iterated design approach.

Brinegar, Kathryn

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Biology

Author/Contributors:
Kathryn Brinegar,
Jill Olin,
Paola López-Duarte

Abstract Name: **Integrating Dietary and Habitat-Use Biomarkers to Recreate Saltmarsh-Dependent Fish Life History**

Many fish enter estuaries during the larval stages and remain in there throughout the juvenile stage, where they feed and grow before returning to coastal areas as adults. In contrast to these transient fish, we also find permanent residents that complete their life cycle within estuaries. The first objective of this study is to understand dietary habits of two transient and one resident saltmarsh fish. To that end, fish were collected from three sites at varying distances from the coast. Muscle tissue samples from two transient species at the juvenile stage: spot [Leiostomus xanthurus] (n=14), and sand seatrout [Cynoscion arenarius] (n=7) and one permanent resident at juvenile and adult stages, Gulf killifish [Fundulus grandis] (n=17) were stable isotopes indicative of diet (13C: energy source; 15N: trophic position, and 34S: source and trophic level identification). Preliminary isotopic results suggest that sand seatrout exhibit more marine signatures and a higher trophic position than the killifish and spot. The second objective of this study is to determine otolith microchemistry differences by species and site. We anticipate fish with more marine dietary markers are more recent arrivals in the marsh, and would have signatures that differ from the marsh resident fish. To evaluate habitat use, we will examine the otolith microchemistry signatures for the same samples. Through the integration of otolith microchemistry and dietary stable isotopes, the life history of the fish will be reconstructed which provides insight into habitat use patterns across the salinity gradient.

Brinkley, Carley

Institution: *NC - Fayetteville State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Eric Griep,
Carley Brinkley,
Antwaun Tune

Abstract Name: **Photorealistic Environment Generation**

There have been recent efforts to advance the overall understanding of Mars. Information remains as important as it was when the rover named Pathfinder left the Earth. As it is difficult to achieve efficient human travel to Mars, the National Aeronautics and Space Administration (NASA) has continued to send these rovers to collect information about the red planet. Bringing data and results allows NASA to test hypotheses and develop scientific theories about Mars. Our goal is to generate a reliable synthetic environment similar to the Martian surface, using the Unity engine. Robots can be simulated in this environment with the Robot Operating System (ROS) and Unity bridge to resemble the process of recording and relaying information. Simulation in robotics is an integral part of the design process, most notably in space robotics where you often only get one chance for everything to work properly. Synthesizing the environment can help provide the quantitative data used to train machine learning models. This gives artificial intelligence the ability to complete tasks like object detection and vision-based navigation. The Unity engine allows for the seamless usage of realistic 3D objects from a wide variety of libraries and resources. This simulation will be able to generate geographic features like those found on Mars; the environment includes sand-like meshes, photorealistic rock walls, and rock patches. The collaboration between our team and other teams within the research program is feeding into a larger project. We're working forward to establishing a business that finds and authenticates data using trained AI robotics.

Briscoe, Emily

Institution: ***IL - Trinity Christian College***

Discipline: Nursing/Health Science

Author/Contributors:
Emily Briscoe

Abstract Name: The Effect of Vitamin D on Chemotherapy Treatment of MCF7 Breast Cancer Cells

Breast cancer is one of the most diagnosed cancers in women and can also affect men. Specifically, the MCF7 strand of breast cancer cells contain estrogen, progesterone, and glucocorticoid receptors and are used for studying and researching breast cancer. Docetaxel is a chemotherapy drug that targets metastatic breast cancers, and Menadione helps to suppress the growth of tumor cells. Vitamin D (VD3) is a hormone that is made in the body in response to the sun. What is still yet to be determined is the effect of VD3 on breast cancer cells when they are treated with Docetaxel or Menadione chemotherapy. Finding the effect will be accomplished by treating the MCF7 breast cancer cells with chemotherapy in the presence and absence of VD3. Methyltransferase assays will be used in order to measure the cells that are still viable after treatment with the chemotherapy. The hope is to determine whether Vitamin D is an under appreciated therapeutic that could be used to help reduce breast cancer in the body.

Brolsma, Aubrey

Institution: ***MI - Hope College***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Aubrey Brolsma

Abstract Name: To Maintain Herself and Her People: Patriarchal Colonization in Early Modern Ireland and Women?s Responses

Patriarchal colonial theory provides the framework in which to understand the systems of white European colonialism as subordinating native women both as members of the colonized population and as part of the subordinated sex. In this way, Ireland is unique as both patriarchal systems featured were white European and played off of each other. In Ireland during colonization, patriarchy was heightened and violence against women was perpetuated against both the settler and native populations. This patriarchal heightening was not only perpetuated by the colonizing force, but was expressed in multiple systems, both colonized Irish and colonizer English. Violence was also expressed from multiple tensions, particularly religious tensions. Women in Ireland, in the various religious and ethnic groups, actively engaged in the religious and political conflicts of the sixteenth and seventeenth century despite the systems of colonialism and patriarchy that were imposed upon them. This can be seen especially in the reinforcement of colonial reshaping and defense of colonial holdings by New English women, as well as the participation in violent uprising, religious defiance, and political preservation of Irish language, including the actions of the Poor Clare nuns, by Irish and Old English women.

Broman, Lauren

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Biology**

Author/Contributors:
Caroline Sargent,
Sumei Liu,
Lauren Broman,
Daniel Yao

Abstract Name: **Role of CRF1 and CRF2 Receptors in Stress-induced Increase of Intestinal Permeability**

Stress has been proven to increase the permeability of the intestinal epithelial layer, contributing to the development of irritable bowel syndrome (IBS) and other intestinal diseases. Corticotropin releasing factor (CRF) has been known to mediate stress-induced increase of intestinal permeability and contribute to the etiology and symptom severity of IBS. Actions of CRF are mediated by two G-protein coupled receptors, CRF1 and CRF2, both are expressed in the intestine. However, the roles of the CRF1 and CRF2 receptors in stress-induced increase of intestinal epithelial permeability remain unknown. Since IBS is more common in females than in males, female mice were used in this study. Mice were restrained for one hour/day for five days. The selective CRF1 and CRF2 receptor antagonists were injected intraperitoneally 15 min prior to the restraint stress. Control mice were kept in their home cages without restraint. After the last restraint stress/control session, the proximal colon was removed and intestinal permeability was measured using the Ussing Chamber System. FITC-inulin (4kD) and horseradish peroxidase (HRP, 40kD) were used as tracers to measure paracellular and transcellular permeability, respectively, across the colonic epithelium. The results showed that restraint stress increased both paracellular and transcellular permeability in the proximal colon. Both the CRF1 and CRF2 receptor antagonists significantly reduced the effects of restraint stress on intestinal permeability, suggesting that both CRF receptor subtypes are involved in stress-induced increase of intestinal permeability. Targeting on both CRF1 and CRF2 receptors in the intestine may help to alleviate stress-induced increase of intestinal permeability and symptoms of IBS.

Brommer, Elisabeth

Institution: *WI - University of Wisconsin-Superior*

Discipline: **Social Work**

Author/Contributors:
Elisabeth Brommer

Abstract Name: **Looking Right At It: Young Adults, Social Media, and Death.**

There is a universal perception that young people think they are invincible, but are young people thinking about death more than we know? This study examines how social media affects the comfort level of young adults in talking about death, a topic that has been little researched so far. Participants ranged between the ages of 18-34 and were all students of University of Wisconsin – Superior. Through semi-structured qualitative interviews, each participant was asked about their interaction with death on social media, watched a death education video, and gave their thoughts about the video. These answers together give a glimpse into how and why young adults are thinking about death and whether they are comfortable enough to talk about it. Overall, young adults are thinking about death and have a comfort with it, but the perceived lack of comfort in others stops them from discussing freely.

Brookbanks, Zoey

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Physics/Astronomy

Author/Contributors:
Zoey Brookbanks

Abstract Name: **Investigation of Nonlinear Polariton-Polariton Interaction and Nanobeam Cavity Coupling**

Semiconductor provides a versatile platform for light-matter coupling studies. By placing semiconductors in an optical cavity, strong coupling between light and excitation in the semiconductor, excitons, can be achieved, allowing for observation of polaritons. In an attempt to investigate nonlinear polariton-polariton interaction, we utilize photonic crystal nanobeam cavities, which induce long-surviving light confinement on the nanoscale, allowing strong polariton-polariton interaction when compared to the natural energy uncertainty of the polaritons. We will also work to optimize cavity-exciton coupling by controlling the thickness of the hBN encapsulation layers.To accomplish this, we will create heterostructures composed of combinations of MoSe2, WS2, and hBN, to integrate with nanobeam cavities, and measure excitation. These are known as Van der Waals materials, which have strong bonds in individual molecular layers, but weaker intermolecular forces. Specifically, transition metal dichalcogenides (TMD) monolayers exhibit large exciton binding energy and strong exciton-photon interaction strength- a necessity for forming polaritons. Samples of monolayers of atoms will be exfoliated from bulk materials, and then applied to substrate. These layers can then be stacked using a polymer stamp and placed into nanocavities. Then, using photoluminescence and reflectance spectroscopy, the polariton resonances can be measured and analyzed. Thus far, the results of measurements support the creation of heterobilayers and integration onto nanocavities allowing strong exciton-photon interaction with Moire excitons from the TMD heterobilayer.

Brooks, Anna

Institution: *WI - University of Wisconsin-Stout*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Anna Brooks,
Spencer Jarvey

Abstract Name: **Saving Golden Lion Tamarins One Nucleotide at a Time**

With only 1,400 individuals surviving in the wild, Leontopithecus rosalia is on the verge of extinction. Conservationists often use tools of modern genetics to study the genetic diversity of the population, but these tools are lacking for L. rosalia. For example, using common polymorphisms such as microsatellite markers, conservationists can identify inbreeding within a population to increase genetic diversity, but identifying polymorphic loci requires a reference genome sequence, and no such sequence exists for L. rosalia. To support conservation efforts, we are using nanopore DNA sequencing to create a draft assembly of the L. rosalia genome. Then, we will set out to find microsatellite markers to develop and validate reagents for genotyping golden-headed tamarins. These results will aid conservationists in saving L. rosalia from extinction.

Brooks, Catherine

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Catherine Brooks

Abstract Name: **Nucleosides Serve as Alternative Carbon Sources that Contribute to the Recovery of Escherichia coli from Glucose-Phosphate Stress**

To survive in their environment, organisms often rely on coordinated responses to stress. For example, enteric bacteria such as Escherichia coli have to deal with glucose-phosphate stress, a form of nutrient starvation that occurs when glycolysis is blocked, inhibiting growth. E. coli responds to this stress through the regulatory actions of the transcription factor SgrR and the small RNA SgrS, which help cells resume growth. Both are essential for the recovery from stress, as deleting sgrR or sgrS severely impairs growth during stress. While this regulatory response has been characterized, it is less clear what alternative carbon sources help cells evade the glycolytic block and resume growth. Previous research suggests that nucleosides may serve as an alternative carbon source, as cells lacking nucleoside transport (such as nupG) and metabolism (such as deoB and deoD) genes exhibit stress-specific growth defects. Here, we present further evidence that supports a role for nucleosides in the recovery from stress. Addition of the nucleoside adenosine rescues the stress-specific growth defect of an sgrS mutant, and deleting either deoB or deoD abrogates this rescue. Taken together, these results confirm the notion that nucleosides serve as a key alternative carbon source that helps cells bypass the glycolytic block and restore growth during glucose-phosphate stress. A focus of current research is analyzing the effect of deleting other nucleoside transport and metabolism genes on adenosine rescue of growth during stress.

Brosig, Emily

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Business

Author/Contributors:
Brinley Kowalkowski *Emily Brosig* *Simran Challana*

Abstract Name: **The Effects of COVID-19 on College Students: Pre- and Post-Vaccine**

This research examined the impact of COVID-19 on college students resource loss and stress levels by offering a comparison across pre- and post-vaccine phases of the pandemic. Two research studies will be presented. In spring 2021 (n=155) and spring 2022 (n=256), business school students completed an online survey assessing their resource loss, stress, physical and psychological health, well-being, academic performance and more during the global COVID-19 pandemic. In support of COR theory, the 2021 "results demonstrated that students with lower resources (i.e., lower socioeconomic status) reported significantly more resource loss; increases in resource loss were significantly associated with increases in stress; and stress was significantly and negatively related to physical health, psychological health, and well-being. Reevaluation of resources served as a buffer in the relationship between resource loss and stress." (Murphy et al., 2022, p. 125-6). The 2022 post-vaccine results showed college students reported over five fewer resource losses, but the same levels of stress compared to the pre-vaccine sample. In support of hypotheses from Hobfoll's (1989) Conservation of Resource (COR) theory as well as Hobfoll and Lilly (1993) work on types of resources, students reported a negative impact on stress and resource loss from the COVID-19 pandemic regardless of vaccination status. Further, the effects were more negative for females than males as well as for upper-class students (juniors, seniors, super seniors) compared to lower-class students (freshmen, sophomores). This is one of the first studies to test the differential impact of resource type (personal characteristics, conditions, energies and objects) on the relationship to stress – finding that personal characteristics were the key component explaining most of the variance in stress. Overall, this is the first series of studies to explore the effects of resource loss or gains at two critical points in a global pandemic.

Brown, Alexa

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alexa Brown *Ayanna Butler* *Treasure Evans*, *Emelyn Martinez* *Quinn McKeever* *Tray Jackson*

Abstract Name: **Trauma, Personality, and Growth: Examining the Role of Personality on Posttraumatic Growth**

The Anxiety Buffer Disruption Theory (ABDT), an extension of the Terror Management Theory (TMT), suggests that posttraumatic stress disorder (PTSD) is a result of the disruption of one's anxiety-buffering mechanisms. This disruption can lead to overwhelming emotions, hyperawareness of one's mortality, and wide-ranging reactions to traumatic events. However, the anxiety-buffer system mitigates the effects of potential terror, promotes posttraumatic growth (PTG), and is comprised of three components: cultural worldviews, self-esteem, and close personal relationships. The success of posttraumatic growth may also stem from personality traits, such as those that can be measured by the Five Factor Model, of the individual that has experienced the traumatic event, which is the focus of this current study. Past research has shown that those who score high on the scale of Neuroticism have a higher risk of developing PTSD (Cyniak-Cieciura et al.,2022), however, there has not been much research on the personality traits that would promote posttraumatic growth. To date, no research has directly assessed the relationship between personality and posttraumatic growth. Identifying these traits could direct the focus toward cultivating specific characteristics within the traumatized individual in hopes of creating a better outcome. This study aims to identify which Big Five Personality Traits are associated with posttraumatic growth. A sample of N=300 individuals with above threshold PTSD symptomology (PCL-5 scores ; 34) will be recruited via research panel to examine the relationship between personality and posttraumatic growth. All participants will complete a Qualtrics survey including demographic, PTG, and anxiety buffer questionnaires. We hypothesize that high scores in openness, extroversion, and agreeableness will be primary characteristics of those who present more posttraumatic growth.

Brown, Angela

Institution: *CO - University of Northern Colorado*

Discipline: English/Linguistics

Author/Contributors:
Angela Brown

Abstract Name: **Language Dissected: An Exploration on the Understanding of Language and its Application to Tolkien's Elvish**

Language is the primary method for communication and human connection world-wide; therefore, understanding how language works allows for more effective global communication. Language is deeply complex and comprised of many linguistic elements. Building on Noam Chomsky's work in Linguistic Theory and the work of linguistics scholars, this research seeks to better understand how language is structured through the combination of phonemes, morphemes, syntax, and sentence structure. Through the study of Biolinguistics, which holds that the principles underpinning the structure of language are biologically preset in the human mind and hence genetically inherited, and the theory of Transformational-Generative Grammar, which shows the abstract structures of specific languages and how they may relate to the structures in other languages, as well as Linguistic relativity, it is possible to understand language creation and usage. Others have attempted to understand natural language creation by creating fictional languages, such as languages which are invented to be used by characters in a book series. J.R.R. Tolkien's Elvish started as such a language, but readers have taken it a step further, studying the grammar systems, pronunciation, and dialects. Some even use Tolkien's Elvish amongst themselves as a spoken language. This then leads to questioning what part of this fictional language made it popular and how languages such as English compare to Elvish. Tolkien summarizes key aspects of invented language which can be applied to spoken language in response to this question. This current research explores Tolkein's Elvish, comparing its structure to English and German, with the eventual intention of creating a new invented language, built on the findings of these linguistic principles and synthesis of Elvish, English, and German.

Brown, Caroline

Institution: *VA - Washington and Lee University*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Caroline Brown

Abstract Name: **Reclaiming Fairytales for Feminism: Trends in Contemporary YA Fantasy Adaptations**

The stories we are told as youth shape identities and perspectives that can take a lifetime to deconstruct. By working to program children and young adults towards a societal norm that not only includes but comprehensively necessitates toxic masculinity, misogyny,heteronormativity, and demonized sexuality, fairytales such as the Grimm's "Little Red Cap," "Briar Rose," and "Little Snow White" perpetuate sexual repression and violence, usually against the victimized woman, i.e. 'damsel', who must in some way defer to the violent, male 'hero'. Further messaging associates beauty with sexual purity and acted-on free will with responsibility for victimhood. Fairytale adaptations effectively track nuanced shifts in cultural values by acting as a vehicle for parental figures to narratively convey said values to their young, who will in turn adapt the stories to share again with the next generation. The cycle continues endlessly, transcending region, language, and time. Recently, these narratives have manifested in the popular twenty-first-century media of the Young Adult (YA) fairytale-fantasy book genre. In this project, I have created a case study of the contemporary Western tradition of Grimm-inspired fairytales. Specifically, I investigate how modern YA fairytale-fantasy texts portray feminine sexuality in relation to one another and in relation to the ancestral Grimm's tales. For example, sexual activity is initiated by female characters [Meyer's Scarlet (2013)] or queered [Wells' Briar Girls (2021)] rather than adhering to the more heteronormative, patriarchal dynamics inherent to the Grimms and reinforced by immensely popular twentieth-century Disney fairytale filmography [see unconscious kiss scenes in Snow White and The Seven Dwarfs (1937) and Sleeping Beauty (1959)]. In this study, I produce a detailed analysis of overarching trends such as these—what changes, and perhaps more importantly what does not, in the communication of women's sexuality to modern-day young adults.

Brown, David

Institution: *TN - University of Tennessee at Chattanooga*

Discipline: Engineering/Applied Sciences

Author/Contributors:
David Brown,
Reetesh Ranjan,
Anthony Skjellum

Abstract Name: **Computational Investigation of Aerodynamic Drag over a Model Pickup Truck**

Vehicle aerodynamics is a key factor, which affects the fuel consumption by the vehicle and is related to the fuel economy. Therefore, a wide range of experimental and computational studies in the past have focused on the assessment of techniques that can lead to aerodynamic drag reductions. While wind-tunnel-based experimental studies can provide results much closer to a practical scenario, such studies often tend to be time-consuming and expensive. To this end, computational fluid dynamics (CFD) as a tool is a promising efficient, and affordable strategy for the design and assessment of novel techniques focused on the improvement of vehicle aerodynamics. In this study, computational investigation of aerodynamic drag over a realistic model of a pickup truck referred to as the Generic Truck Utility (GTU), is performed using the OpenFOAM software. GTU is a realistic representation of a pickup truck and an interchangeable sports utility vehicle for which reference experimental results are available. We employ unsteady Reynolds Averaged Navier Stokes (URANS) formulation to examine the flow field and obtain the resulting aerodynamic drag. The key focus of this study is to establish a computational configuration and strategy, which can be utilized further for the assessment of approaches for improved vehicle aerodynamics. In particular, we examine the role of computational domain extent, computational grid, and wind speed on the resulting drag coefficient. The analysis of the results showed some sensitivity of the drag coefficient to the employed computational domain size, whereas the effects of the grid resolution and the wind speed on the drag coefficient were found to be minimal. As expected, a separated flow region occurs at the back of the truck with a spatially evolving wake, controlling which can be helpful to reduce the aerodynamic drag.

Brown, Gabriel

Institution: *MA - Worcester Polytechnic Institute*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Tiffany Foote,
Gabriel Brown,
Nishan Grandhi,
William Michels

Abstract Name: **Assessing Lupine as an Environmental Conservation Tool in Iceland**

Iceland's environment is highly prone to erosion and has conditions that make plant growth challenging. The plant lupine is a divisive solution to soil erosion and reforestation that has been found successful in some regions of Iceland but not all. We researched the issue through extensive document research, expert interviews from different perspectives, and surveys of native Icelanders, to get as complete and unbiased a picture of the issue as possible. We used this to create a decision guide that gives a comprehensive account any person in Iceland can use in order to choose what they would like to do to address soil conservation and reforestation issues on their land. Key issues the decision guide covers are soil conservation, reforestation, and removal of lupine. Along with the decision guide, we include a decisional balance sheet to show the pros and cons of lupine usage in Iceland and a plant infographic to teach about the plants in the decision guide. These tools can be used by land owners in Iceland to make decisions about restoration and reforestation on their land.

Brown, Jenny

Institution: *HI - Kapi'olani Community College*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jenny Brown

Abstract Name: **Setup and Analysis of Proposed Data Loggers Used in Telemetry for the Prime Focus Spectrograph**

The Subaru Telescope is an 8.2-meter optical-infrared telescope located on the summit of Mauna Kea in Hawai'i operated by the National Astronomical Observatory of Japan (NAOJ)/ National Institutes of Natural Sciences. The telescope contributes significant data to a wide range of astronomical research using a technology called Prime Focus Spectrograph (PFS). Within the telemetry system of the spectrograph, data loggers play an essential role such as monitor temperature, coolant flow, and pressure to control environmental conditions. Due to the demands of the telescope instrumentation, the lifecycle of the data loggers are relatively short and need to be replaced every few years. Ill-suited data loggers increase the need for telemetry system maintenance and cause research activities to halt, which also increased project costs. The objective of this project was to comprehensively review and compare available data loggers and provide documentation to minimize the time it takes for telescope technicians to install and maintain the telemetry system.The first step was to determine the telemetry system's requirement and installation parameters and systematically compare those with the features of available data loggers through a trade study. The devices were set up with preliminary IP addresses configurations and, under laboratory conditions, temperature error ranges were compared to the manufacturer's documentation to verify accuracy. Finally, a user documentation of the process and justification for component choices was created to assist with future replacements and maintenance.The DAQ970A Switch Unit and its module DAQM90 was chosen as an ideal replacement due to its improvements in memory and processing capabilities.In conclusion, the systematic component review and documentation led to an increased installation, maintenance, and operation efficiency of the Subaru telescope and its ability to conduct scientific studies. Future work includes analysis of different thermocouples and sensors within the instrumentation.

Brown, Jordan

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Jordan Brown,
Colten St. John,
Joshua Clawson

Abstract Name: **Preventing Adherence of Candida spp. with Pre-Therapeutic Drug - Filastatin**

Candida yeasts are the most common human fungal pathogens. These primarily opportunistic pathogens can infect a variety of tissues and cause a variety of infections. They are also a common cause of healthcare-associated infections (HAI) in immunocompromised individuals. Candida yeasts usually form biofilms upon adhesion, which then increases their pathogenicity due to their lack of response to conventional treatment. Candida auris is an emerging fungal pathogen with nearly a 57% mortality rate. Filastatin is a drug not yet approved for human use but has been found to uniquely inhibit adhesion of C. albicans to the surface of several biomaterials and human cells. This study will assess if Filastatin is also able to inhibit the adhesion of three other pathogenic Candida species, C. albicans, C. glabrata, and C. auris. 96 well polystyrene microtiter plates will be used to assess the inhibition of fungal adhesion using various concentrations of Filastatin. After incubation, cells grown in the wells will be stained with either crystal violet, (or alamar blue to test for viability as well). Upon washing the plate with ice water several times to clear out stained cells that didn't adhere to the surface, methanol will be added to each well and allowed to sit for 45 minutes. The solution of methanol and stained cells will then be read by a spectrophotometer at 590 nm for the varying absorbances and will be compared to our control of both saline and Candida albicans. This will be beneficial to the future of healthcare as it will allow the number of infections with Candida species to be decreased. Future medical devices coated in Filastatin would be more resistant to Candida biofilm formation and would therefore limit the number of infections and mortality.

Brown, Justinna

Institution: *PA - Juniata College*

Discipline: Communication/Journalism

Author/Contributors:
Justinna Brown

Abstract Name: **A Qualitative Analysis of Audience Responses to StoryCorps&#65533; &#65533;One Small Step&#65533; Project: A Prejudice Reduction Program Addressing Political Polarization**

Where did the "United" part of United States of America go? How are Americans addressing political polarization in our country? Some say new media is to blame, and others simply blame the other political party. Like many other national issues, the cause of polarization is complex, intergenerational, and multi-dimensional. However, the complexity of this issue does not mean it is impossible to reconcile. The issue of polarization in the U.S. is currently being addressed by few organizations to mitigate continued division and dangerous intergroup conflict. Prejudice reduction programs and projects such as NPR's StoryCorps's "One Small Step" are addressing the hostile division in the United States and therefore serves as the case study of my research. This qualitative research observes means of American polarization reduction through the lens of communication theory as well as intergroup contact theory. Human participants of my study will view three "One Small Step" video projects on common ground via YouTube and complete corresponding pre- and post-surveys to measure change in attitudes of prejudice. Using Gordon Allport's intergroup contact theory, I hypothesize that witnesses and audience members of "One Small Step" videos can reduce their political prejudice and hostility just as direct participants in the videos can. We need more research on audience responses to prejudice reduction programs. With political polarization on the rise, it is important to understand the effectiveness of prejudice reduction programs and projects beyond simply the direct participants. This study hopes to prompt significant questions about strategies for combatting polarization and audiences' interactions with them.

Brown, Maggie

Institution: *FL - University of West Florida*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Maggie Brown

Abstract Name: **Untitled (Winter)**

This creative project attempts to reconcile my few, but poignant memories of my grandfather with those of my other relatives and the pain of those who lost loved ones during the Vietnam war. This sculptural piece is a mixed-media installation, taking up a space of around 7Hx3Wx5D ft. Materials include plastic droplets, plywood, a plastic fluorescent light diffuser, a monitor, a monitor mount, monofilament, and a video player. The monitor will take up a space no larger than 28 by 32 inches and be mounted on the wall. The sculpture is made of a plywood base, where the fluorescent light diffuser will rest inside. Monofilament is used to connect the plastic droplets to the light diffuser. The sculpture hangsin front of the monitor suspending the plastic dropletsin the space between the viewer and the screen, creating distorted imagery. Droplets hanging from the ceiling symbolize the literal suspension of tears, the continuous and unresolved pain of those who lost a loved one in the war. The view through the droplets—a metaphor to pain—reveals scattered memories as a performance, I re-enact memories of personal experiences and reflections from my mother to understand her experience as the child of a Navy Sailor during the Vietnam War. The research basis for this piece is direct experience with family as well as historical record to inspire a deeper understanding of the war's emotional effect on a national and personal level. This piece draws conceptual inspiration from Lin's Vietnam Veterans Memorial,the familial-based performance art of Guillermo Gomez-Pena, and Mark Tribe's Port Huron Project. Those affected and curious about socially activist works and complex family relationships will be interested in this work. The mentor for this project works in digital media and installations and will help with the video aspect and the sculptural piece.

Brown, Marni

Institution: *CAN - Vancouver Island University*

Discipline: **Public Health**

Author/Contributors:
Sarah Sheppard *Kaylie Curtis* *Marni Brown*
Lola Raymond-Bhatt

Abstract Name: **Preparedness and Comfort Levels in Providing Sexual Health Education on Vancouver Island**

Sex trafficking and sexualized violence are increasing in communities across British Columbia (BC). Sexual health education has been recognized as a powerful tool to prevent children and youth from experiencing these devastating forms of abuse. The question then becomes: who is providing this sexual health education to British Columbian youth, and how well is it being provided? While parents and private consultants often play a role in teaching children the basic concepts involved in sexual health education, the quality and scope of their explanations can vary widely. As such, a key source of sexual health education is teachers in primary and secondary schools. Typically, sexual health education in BC begins in kindergarten and spans through grade ten. While the topic's content is regulated through the provincial curriculum, previous research has shown that teachers are not providing consistent and thorough education. The disconnect between the curriculum and educators appears to be hinged upon two concepts: first, educators themselves do not have enough knowledge on the topics to teach them effectively, and second, educators may not feel comfortable with certain sensitive topics within the curriculum. This project sought to investigate how prepared Vancouver Island teachers-in-training are to teach sexual health education based on their knowledge and comfort levels regarding the curriculum topics. A survey was created with three sections: individual demographics, a curriculum-based knowledge test, and a subjective section focusing on comfort levels regarding various sexual health topics. The survey was open to university students enrolled in the Bachelor and Master of Education programs at Vancouver Island University and the University of Victoria. By examining these future teachers, this project aimed to illuminate how prepared the next generation of teachers are and provide insight into the future of sexual health education.

Brown, Shantel

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Shantel Brown

Abstract Name: The Coming-of-Age Genre: A Genre of Identity Exploration for Emerging Adults

This project aims to bring Rudine Sims Bishop's work on worldview construction alongside the cinematic theory of the female gaze to address how coming-of-age films may assist emerging adults in identity development. To do so, I will be drawing upon the work of developmental psychologist Erik Erikson, exploring what characteristics distinguish the "identity vs. role confusion" stage of psychosocial development. I will then juxtapose these characteristics to Rudine Sim Bishop's theories of representation in children's literature to argue how Bishop's ideas can be applied to cinematography. I will further support this argument by synthesizing contemporary scholarship that centers how the digital age is impacting identity development inemerging adults. After parsing through these works on child development, I will perform case studies on modern coming-of-age films from the last decade to better understand if and/or how those narratives are reinforcing intersectional representation. I will conclude this presentationby acknowledging future areas of study, as well as raising awareness of the responsibility of directors, producers, consumers, and educational figures to expose youth to diverse narratives to better assist identity development.

Brown, Shantel

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Shantel Brown,
Frederick Gaskill,
Serenna Snider

Abstract Name: Ties Between Social Media Use and ADHD, Depression, and Anxiety-Related Symptoms

Social media has become a staple in the life of adolescents and young adults. In a recent study, 97% of teens reported using at least one social media platform (Anderson, & Jiang, 2018). With this increased use of social media platforms, psychologists are concerned about their potential impact(s) on people's experiences in life. One avenue of interest is the relationship between social media usage and mental health conditions. Studies have reported that high social media use is positively correlated with symptoms of ADHD (Baumgartner et al., 2017), anxiety, and depression (Hussain & Griffiths, 2019). Through this study, we predict to find similar findings, hypothesizing that ADHD, depression, and anxiety-related symptoms in University of Wisconsin-Eau Claire college students will all be positively correlated with their time spent on social media. To collect this data, the research team developed a survey that asked participants to report their demographic information (age, gender identity, sexual orientation, and major), time spent using social media, and mental health-related symptoms using the PHQ-9, GAD-7, and ASRS-6 assessments. Participants will be recruited through WRIT 114-120 classes by asking the students to voluntarily participate in an online survey. To analyze the survey results, the researchers will conduct bivariate correlational analyses of the total time spent on social media in the last seven days and each set of mental health-related symptoms (ADHD, depression, anxiety). We perceive this research, and the findings, as important for furthering the understanding of the relationship between ADHD, depression, and anxiety symptoms and social media use.

Brown, Victor

Institution: *NY - SUNY Brockport*

Discipline: Computer Science/Information Systems

Author/Contributors:
Victor Brown

Abstract Name: **Exploring the Approaches of Preventing Bias in Artificial Intelligence**

Exploring the Approaches of Preventing Bias in Artificial Intelligence
From the algorithm and input attributes chosen to the hidden correlations within training data, bias in Artificial Intelligence comes from a wide range of sources. There are three general classes used to describe bias: creeping the subject's intent into the AI implementation, skewed training dataset, and anomaly individual samples. This study aims to explore not only these classes that can cause bias but also the approaches that can help prevent bias. In the literature, a combination of quantitative assessments, business processes, monitoring, data review, evaluations, and controlled experiments can be used to help in mitigating the issues.
However, how to monitor, evaluate, and control the AI processes including algorithms and training datasets seems the key to resolving the problem. One of the potential approaches is introducing a black-box test into all the processes in the AI pipeline. Another is having the AI explainable, namely keeping the white-box model in both algorithm and the training data set. This can be an effective way to verify that the data is accurate and does not contain protected or incorrect data. However, unconscious bias within the training data set is difficult to perceive because of the nature of unconscious bias. The anti-bias approaches are also very important to evaluate the reliabilities of an AI model and validate the performance of a predictive model. While there may be no single solution to the bias in artificial intelligence, the goal of this research is to explore these biases and their best anti-bias approaches to reducing these biases in future workings.

Brown, Zoe

Institution: *GA - Kennesaw State University*

Discipline: Education

Author/Contributors:
Chinasa Elue *Cristen Canavino* *Christopher Gardner,*
Sarah Hampton *DeCarlos Mckinney* *Zoe Brown*

Abstract Name: **Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the Experiences of First-Year College Students**

Student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years. The offset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before. Of growing concern is the rising mental health crisis that is sweeping through higher education which warrants an immediate and intentional response. Further, students are currently facing dire financial constraints, food and housing insecurities, and many other challenges that complicate their college experiences. As freshman students are now experiencing college for the first time, their experiences may vary drastically from their predecessors. Specifically, current first-year students' college transitions are muddied from their various high school experiences that may have been a remote, hybrid, or in-person with some variation of security measures. Further, the grief, loss, and trauma first-year college students have experienced during the pandemic warrant special attention as we are contending with the types of resources and support, they need to matriculate and complete their degrees. The remnants of grief and trauma from the pandemic still linger and are impacting the college experiences of first-year students and their abilities to navigate their academic and professional goals. Hence, through a qualitative research design, our research explores the lived experiences of first-year college students. Specifically, the research question explored in our study is: How or to what extent has grief and trauma from COVID impacted the educational journeys of first-year students? The aim of this research is to provide an important opportunity to investigate how to better support college students as they move through collegiate experiences.

Bruner, Brittany

Institution: ***WI - University of Wisconsin-Superior***

Discipline: Biology

Author/Contributors:
Dr. Lorena Rios,
Brittany Bruner

Abstract Name: Translocation of Microplastic Fibers in Lake Trout and Their Impact on Human Health

Research on the effects of microplastic fibers have demonstrated harmful and negative impacts on wildlife and the environment. The effect studies have shown to a certain degree is that microplastic fibers can become ingested at lower trophic levels in aquatic enviornments and have led to ecosystem disturbances. An interesting observation has been proposed that microplastic fibers are able to translocate in fish from their stomachs to their liver. This has the potential for an increased concern related to human health if fish are consumed from the wild and may cause internal damage on a microscopic level. By understanding the pathology and biology of how microplastic fibers can translocate through cellular membranes will help better understand how this phenomenon is able to occur. Through performing dissections of 78 samples of Lake Trout from Lake Superior, there was no definitive evidence to support that translocation of microplastic fibers from the stomach to the liver has occurred. Throught he process of chemical digestion and the use of FTIR, this research aims to show how different controls can help assess the risk of microplastic fibers and their threat if they are able to translocate across different membranes.

Bruni, Olivia

Institution: ***WI - St. Norbert College***

Discipline: Biology

Author/Contributors:
Olivia Groenewold,
Olivia Bruni
Alfred Roca,
Adam Brandt

Abstract Name: The Elephants of Guinea-Conakry: Nuclear and Mitochondrial Genetic Patterns

Elephant populations in Africa are threatened by poaching and habitat destruction. The disappearing elephant range has caused small elephant populations to be isolated from others which may lead to a loss in genetic diversity due to inbreeding. Non-invasively collected fecal samples were obtained from elephants in Guinea-Conakry. DNA was isolated from these samples, and a portion of the mitochondrial DNA control region and three nuclear genes (PLP1, PHKA2, and BGN) were amplified by PCR and sequenced. Sequences were analyzed to determine mitochondrial haplotype diversity and species-diagnostic single nucleotide polymorphisms (SNPs). Data from this work will aid in conservation and anti-poaching efforts by contributing to a growing genetic database of African elephants.

Brunton, Jacob

Institution: *IA - Iowa State University*

Discipline: Physics/Astronomy

Author/Contributors:
Jacob Brunton *Joshua Aftergood* *Thomas Iadecola,* *Peter Orth* *Yongxin Yao*

Abstract Name: **Quantum algorithms for the simulation of nonlinear molecular polarizabilities**

We investigate quantum algorithms to calculate nonlinear dipole responses of molecules in external fields. Computing nonlinear response on classical computers is a highly challenging task in quantum chemistry, which is crucial for computational design of organic nonlinear optical materials. We approach this problem using quantum algorithms tailored for noisy intermediate-scale quantum computers, since quantum dynamics simulations are one of the primary targets for early quantum advantage. We benchmark and compare algorithms based on Trotterized real-time evolution, against an adaptive variational approach. Taking BH as a classically tractable benchmark problem, we simulate the molecular dipolar response in a monochromatic time-dependent electric field for one period. We compute both the first order polarizability αzz(−ω; ω) and the first two nonlinear hyperpolarizabilities βzzz(−2ω; ω, ω) and βzzz(0; ω, −ω), corresponding to second-harmonic and DC dipolar response. We employ a finite difference expression that is accurate up to third order for analysis. STO-3G minimal basis is used for the calculation of hyperpolarizabilities, where βzzz(−2ω; ω, ω) and βzzz(0; ω, −ω) obtained from exact diagonalization have a relative error of 0.03% and 13% compared to the converged large basis calculations. On the contrary, we find that the αzz has a large relative error of 66% showing that the minimal basis is insufficient. Therefore, we construct a series of increasingly larger basis sets, where the obtained αzz converges gradually to exact result down to a relative error of 4%. Using these basis sets, we compare quantum resources of direct Trotter dynamics simulation with the stochastic Trotter evolution method q-drift and a variational method using adaptively constructed problem-specific ansätze. We also use the basis-set sequence for αzz to numerically demonstrate the system-size scaling of the quantum resources.

Buabeng, Pearl

Institution: *MN - Hamline University*

Discipline: Biology

Author/Contributors:
Pearl Buabeng

Abstract Name: **Determining the Gene Expression Pattern of Nectin Cell Adhesion Molecule 1 (Nectin1)**

Neural crest cells (NCCs) are a population of stem cells found in vertebrate embryos. These cells are induced in the neural plate border in early embryonic development. After the closure of the neural tube, neural crest cells leave through an epithelial to mesenchymal transition (EMT). This allows the cells to lose their epithelial cell characteristics, migrate throughout the embryo, and eventually differentiate skin pigment cells, craniofacial skeleton, and the peripheral nervous system. Learning more about neural crest development is vital for preventing congenital disorders. Abnormalities in the development of NCCs lead to cleft lip, cleft palate, and frontonasal dysplasia amongst many other things. Our previous work identified 674 genes that are potential novel regulators of NCC development. One of the identified genes was Nectin1. Nectin1 (Nectin cell adhesion molecule 1) is a gene that encodes adhesion proteins. Because changes in adhesion properties are central to EMT and migration, we hypothesized that Nectin1 could be essential for neural crest development, and thus would be expressed in premigratory and migratory cells. This study aimed to identify when and where Nectin1 is expressed in early NCC development. We used in situ hybridization (ISH) to determine the gene expression patterns of Nectin1 in chick embryos. Our results indicated that Nectin1 is strongly expressed in premigratory and migratory cells and because it is located at the right time and place, our future work will focus on determining if Nectin1 plays a role in NCC formation and migration.

Bube, DeNae

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Business**

Author/Contributors:
Harrison Thiry,
DeNae Bube,
Riley Kangas

Abstract Name: **Neurodiversity, Personality, and Mental Health Challenges**

Prominent variations of neurodiversity include autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), and dyslexia. Institutions of higher education should foster an inclusive environment for these individuals, which includes understanding common behavioral attributes, limitations, predictors, prevalence, and desirable adaptations.Participants in our pilot study were 23 females and 8 males (31 total), drawn from convenience and student sources. The primary goal in this first foray into investigation of neurodiversity in higher education was to focus on personality and related associations with common attributes of these three forms of neurodiversity. Follow-up with larger samples is planned to investigate their prevalence and effects / limitations in the college environment.Results found that openness to experience correlated negatively with typical ASD symptoms such as difficulty with social norms (r = -.52, .01). Neuroticism correlated positively with ASD symptoms (r = .46, .05), and individuals higher on neuroticism were more likely to suffer burnout (r = .74, .00001). Participants endorsing ADHD symptoms also reported higher burnout (r = .50, .01), and participants not reporting ADHD symptoms reported higher levels of self-care activities (r = -.46, .01).Although this pilot study focused on associations and not causality, our results nonetheless identify several correlates of neurodiverse symptoms and provide direction for follow-up research. The potential benefits of enhanced understanding of neurodiversity in higher education include targeted resources, classroom adaptations, and counseling resources. In short, continued research offers great potential to afford neurodiverse students the same opportunity to succeed as neuro-normal students.

Buck, Payden

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biology**

Author/Contributors:
Payden Buck

Abstract Name: **The Effects of Mode and Timing of the Inoculation of Azospirillum on Spring Wheat Yield and Physiology**

Azospirillum is a genus of plant growth-promoting bacteria known for its ability to fix nitrogen from the atmosphere converting it into a form that can be used by plants. There is evidence that Azospirillum benefits plants by colonizing the region around the roots and the roots themselves. Commercial products that introduce Azospirillum to crops exist but the effects of the timing and mode of their application on crop physiology and overall yield is not well known. To investigate this, hard red spring wheat plants (Triticum aestivum) are being grown at the University of Wisconsin-Eau Claire greenhouse under five treatments that vary the mode and timing of Azospirillum inoculation (none, as a seed coating, and as a soil-surface dressing at 3 stages of development; at planting, after development of the 1st true leaf, and at the tillering stage). The Feekes scale of wheat development was consulted to decern which stages plants were in at a given time. To determine the effects of timing and mode of inoculation on plant physiology and growth, plant height, leaf chlorophyll content, and developmental stage are being recorded weekly. When mature, overall biomass accumulation and grain yield will be measured. Data generated from this experiment will uncover if certain modes of Azospirillum application are more beneficial than others and inform best application practices in the field. Developing successful Azospirillum inoculation practices will also reduce the need for synthetic fertilizers and pesticides, therefore maintaining healthy soil conditions and promoting environmental sustainability.

Buckert, Robert

Institution: *NY - SUNY Brockport*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Jacob Straub,
Christopher Norment,
Jacques Rinchard,
Joshua Stiller,
Michael Morgan,
Robert Buckert

Abstract Name: **Assessing Thiamine Deficiency in Diving and Sea Ducks in New York**

Thiamine deficiency has been linked to waterfowl decline in Europe; however, the topic remains largely unexplored in the Great Lakes region and other parts of North America. Thigh muscles and livers were collected from ten species of diving and sea ducks (greater and lesser scaup, white-winged and black scoter, long-tailed duck, bufflehead, common goldeneye, and hooded, common, and red-breasted merganser) from the Lake Ontario watershed in Fall-Winter 2021-22. Mallard x northern pintail hybrids raised in captivity on a stable diet were used as a control. Thiamine vitamers (thiamine pyrophosphate, thiamine monophosphate, and free thiamine) were extracted and quantified using high-performance liquid chromatography. Total thiamine concentrations in thigh muscles significantly differed among species (0.01), with total thiamine concentrations greater in long-tailed duck compared to all other species, except lesser scaup. Free thiamine and thiamine monophosphate concentrations significantly differed among species (0.01), whereas thiamine pyrophosphate concentrations did not (p>0.01). Based on thiamine in thigh muscles, most birds appear thiamine replete. We are currently analyzing the liver tissues and these data will provide a more holistic view of thiamine levels in diving and sea ducks from the Great Lakes region.

Buckner, David

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Public Health

Author/Contributors:
Madison Lanai,
David Buckner,
Kennedy Carpenter

Abstract Name: **Designing A Metastatic Breast Cancer Support Program**

Currently,there is a significant lack of community-based support groups for individuals living with Metastatic Breast Cancer (MBC). The majority of breast cancer support groups exist for those who are breast cancer survivors, inadvertently overlooking those given a terminal diagnosis. Additionally, only about 2% to 5% of the funds raised for breast cancer research is spent towards breast cancer metastasis studies. The goal of our research is to create a patient-led, community-based support program for individuals living with MBC. This will require the collection of resources that address the specific needs of this community, which were identified through extensive literary research and comprehensive surveys. The survey we created assessed their backgrounds, capabilities, needs, and desires. Additionally, we conducted 15 one-on-one interviews with MBC individuals to gather information on their past support program experiences and program structural preferences.With this qualitative and quantitative data, we are currently developing the Charlotte MBC Program and plan on officially implementing the program in the spring of 2023. We have partnered with Carolina Breast Friends, a Charlotte-based nonprofit organization centered around providing support and resources to those who are affected by breast cancer. Carolina Breast Friends does not currently have any specialized services for those with metastatic breast cancer and partnering with this organization allows them to impact more lives within the breast cancer community. We plan on housing our program at their Pink House, a unique respite center for breast cancer survivors.

Budankayala, Meghana

Institution: *TX - San Jacinto College*

Discipline: Nursing/Health Science

Author/Contributors:
Meghana Budankayala

Abstract Name: **Correlations Between Breast Cancer to Health and Environmental Risk Factors**

Breast cancer occurs when cells are influenced by particular hormones and alterations to specific genes in the DNA, leading them to gradually grow out of control and becoming damaged. In the United States, breast cancer is the most common type of cancer among women. Therefore, analyzing the correlation between biological health risks and environmental risk can allow better understanding towards prevention. Viz Hub website was utilized to gather statistics on various risk factors from 10 counties across six states in the United States that showed the highest levels of breast cancer mortality; to identify possible correlations. Health is vital to maintaining homeostasis of the body and regulating hormones. The endocrine system can be disrupted by health and environmental factors.This can cause alterations inthe regulation of endocrinal glands leading to disorders and illnesses.Additionally, exceeding the body's adequate nutrients and capacity to metabolize can lead to health problems, such as, obesity, malnutrition, or anemia. Furthermore, many research studies have concluded that the use of drugs, smoking, or alcohol are risk factors.The results of this study show that diabetes has the highest correlation to breast cancer mortality rate when compared to all risk factors. Evidently, in metabolic disorders involving insulin resistance, organs with high estrogen demand like the breast and ovaries have an increased rate of cancer development. Additionally, data collected on the levels of obesity prevalence to breast cancer showed that particularly obese women have a greater risk of breast cancer compared to a healthy body composition. Anemia, smoking, and drug use also showed correlations to breast cancer mortality rate in some states. These statements are supported by data that was gathered from Viz Hub, displaying a correlation to the health and environmental risk factors and an interference within the 10 counties in United States.

Buehlman, Spencer

Institution: *NC - Elon University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Spencer Buehlman

Abstract Name: **Finding Fires: Drone-Based Autonomous Fire Detection**

Over the past several years, wildfires have become more extreme, destroying acres of nature and endangering lives. Recently, research in this field has turned to machine learning-based approaches to enable autonomous detection of wildfires before they cause serious damage. This proposal reviews recent scholarship applying machine learning to fire detection. While a variety of machine learning approaches have been proposed in the literature, prior work has not adequately addressed the issue of which approach is best when implemented as part of an autonomous drone platform. Recent years have seen a marked increase in drone capability coupled with decreasing cost, making them a compelling choice for implementing an autonomous flying fire detection system. This project addresses the gap by evaluating the effectiveness of two main machine learning techniques in detecting fires from the perspective of a drone camera. The two methods that will be analyzed are the Gaussian Mixture Model (GMM) and the Deep Convolutional Neural Network (CNN). Specifically, the project will compare the two approaches in terms of a variety of metrics including detection accuracy and speed to determine which is better suited for use on a drone. In addition to quantitative evaluation of performance metrics, a qualitative analysis will characterize effectiveness of the methods for a range of scenarios, such as smoke, active fires, and false alarm situations. The project outcomes will help identify where future research should focus in testing large-scale real-world scenarios on the superior system.

Buell, Jeffrey

Institution: ***IN - Indiana State University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Justin Vandgilder *Caleb Bowles* *Jeffery Buell*
Christian Herron *Isabella Leon* *Mackenzie Michael*
Lillian Moehring *Sophia Rashid* *Carter Ritzheimer*
Sandra Xique *Jennifer Latimer*

Abstract Name: Investigating the use of crayfish as environmental water quality sentinels for metal pollution in Indiana creeks

Ephemeral creeks and streams can be difficult to monitor and assess for water quality. Unfortunately, these same water systems can play a significant role in the input of metals and other pollutants into major waterways. Metals are often the result of nonpoint source or historic point source pollution that is no longer active, making assessment and exposure prevention difficult. An economical and reliable approach to determine water quality in these areas would be the use of reliable sentinel species that are endemic, easily identified, and respond in a quantifiably way to metals in the environment. Macroinvertebrate assemblages have been historically used to create comprehensive biotic indexes, but these indices can be complicated, seasonal, and difficult to assess without identification bias. For this project, crayfish samples, water samples, and sediment samples were collected in several creeks in Indiana representing a variety of environmental exposures. We hypothesized that because are omnivores and biotic engineers, their environmental interactions place them in a unique niche making them a reliable sentinel species. By testing and comparing the bioaccumulation of metals in crayfish tissue, water, and sediments to dominant species, average crayfish size, and population density, we can reliably predict creek health for metals. Our results determined thatFaxonius rusticus(rusty crayfish) were found in creeks with higher environmental metals. Also, crayfish cephalothorax measurements were smaller in higher metal environments. This data, along with metal bioaccumulation and biomagnification make crayfish an excellent sentinel for water quality in creeks.

Bui, Justin

Institution: ***CA - California State University - Fullerton***

Discipline: Computer Science/Information Systems

Author/Contributors:
Lyba Batla,
Bryan Cortes,
Justin Bui,
Aditya Shah

Abstract Name: Targeted Messaging about Food Storage in Social Media Posts

Food waste is a major problem in the United States and around the globe. In the U.S alone, avoidable food waste exceeds 55 million metric tonnes per year, nearly 29% of annual production and it has been estimated that this waste produces life-cycle greenhouse gas emissions of at least 113 million metric tonnes of CO2 annually, equivalent to 2% of national emissions. Food waste by end consumers occurs for many reasons, including food being prepared and stored incorrectly, and misunderstandings of the “best by” date on foods. Food-related messaging is widespread on social media, with users posting comments and photographs of foods that they are preparing or enjoying. These messages are then viewed by millions of users. Targeted responses to such messages could correct some misconceptions and therefore reduce food waste. The main technical challenges for creating targeted messages are identifying food-related posts and automatically generating a relevant response. We have developed an approach that uses machine learning to identify if a social media post mentions specific foods. The approach is able to detect food entities in Twitter posts with a precision and recall of 0.8. This approach was also applied to identify foods in photographs posted on Instagram using object recognition in images algorithms. If a post is identified as likely to be about a specific food, a short message with information such as storing tips and methods to prepare that food is generated. We use the FoodKeeper dataset published by the U.S. Department of Agriculture which contains descriptions of foods and their storage methods to generate targeted responses. This approach could therefore be used as a tool for more targeted and real-time messaging of information related to food and potentially help reduce food waste by end consumers.

Bukova, Anastassiya

Institution: ***IN - Indiana State University***

Discipline: **Economics**

Author/Contributors:
Anastassiya Bukova

Abstract Name: **The implications of decriminalising domestic violence in Iran and Kazakhstan**

My research focuses on the problem of domestic violence in Iran and Kazakhstan due to growing concerns about the problem's contribution to the stagnation in the process of achieving gender equality. The chosen developing nations have similar unique characteristics such as domestic violence legality and decriminalisation, religious background and history of colonisation. The impacts on women stretch beyond physical and mental harm and cause further problems by preventing them from being active members of society in a social and economic sense. Academic literature on the topic explores the reasons behind the social acceptance of the issue while failing to estimate the economic and other implications of decriminalisation. In this study, I use official governmental statistics on crime in Kazakhstan between 2000 and 2021 to examine the consequencesof decriminalisation which went into effect in 2017. While the recent decriminalisation of domestic abuse in Kazakhstan allows me to compare direct impacts, the Iranian government has never passed a law protecting women in their homes. Due to the lack of official data on the issue, I use various scholarly articles which estimate the prevalence of domestic violence in Iran as well as qualitative studies surveying Iranians on this topic. My analysis shows a steep decrease(50.6%) in the number of reported cases of domestic abuse in Kazakhstan between 2016 and 2021 while other crimes are on the rise which signifies a growing reluctance of women to seek help. Similarly, data shows a decrease in the number of marriages which can be related to a desire not to give up legal protections upon marriage. My exploration of risk factors in Iran shows that historic highs in literacy rates and higher education obtainment have had little effect on the position of women and domestic violence rates.

Bunker, Janice

Institution: ***UT - University of Utah***

Discipline: **Art/Music History**

Author/Contributors:
Janice Bunker

Abstract Name: **?And Who Has Not Had Their Ears Tickled?? Sophia and the British Musical Miscellany**

Historian Charles Burney mentions that Plutarch and Athenaeus both wrote about a "most celebrated" Greek female flutist named Lamia. Burney's opinion is that her fame was based on her abilities as a courtesan rather than as a flutist. Greek artifacts from this time often depict female musicians erotically, though it is possible that female musicians were perceived and portrayed as sexual objects because their performances were controlled and viewed by men, and the artifacts were created by men. In the eighteenth century, similar attitudes existed about the social and moral status of public female performers. Domestic female performers, though considered socially and morally superior, treaded a fine line, and the flute was not considered a "proper" instrument. Thus, information about female flute players performing either in public or at home is difficult to find, and if it exists, is in non-traditional resources. The current research project will review non-traditional literature for clues about female domestic musicians who may have played the flute.For example, the Scottish National Library's copy of The British Musical Miscellany, Volume One bears the signature Sophia Eyre on the title page. The score includes separately notated flute arrangements of popular songs, thus opening the possibility that Sophia Eyre and other female domestic musicians could have played the flute. Results from an analysis of this score could shed light on the musical culture in which female domestic musicians lived, and add significantly to the growing body of knowledge about the musical lives of underrecognized eighteenth-century women who paved the way for female musicians of today.

Bunko, Gabrielle (Gabby)

Institution: *MT - Montana State University - Bozeman*

Discipline: English/Linguistics

Author/Contributors:
Gabby Bunko

Abstract Name: **(Dis)Integration and Reframing in Writing and Literary Studies**

I'm interrogating the dis-integration and integration between writing and literary studies–gaps and overlaps that have evolved out of the two fields' different histories–to ascertain how the two could be better integrated. Since the inception of literary studies, English Departments in American colleges and universities over a century ago, literature and composition have been pursued as largely separate fields of study. This study won't argue for consolidation and reintegration, but, as both a writing and literature major, I've noticed places where students could benefit from further integration.This study explores means of integration which can eventually be translated in the university setting and beyond to high schools for greater student accessibility. One way of understanding how the two fields think differently about writing (noun and verb) and reading is to look at conceptual metaphors (Lakoff and Johnson 1980) in corpora of literary and writing studies scholarship and in writing and literature classes. Conceptual metaphors allow me to directly compare these data sources for convergence and divergences in interests and values. Interviews with faculty teaching those courses provide insight into teaching philosophies, and student surveys provide feedback about effects on student learning outcomes. Furthermore, I've interviewed our English Department chair and completed discourse analyses of English Department websites to see how the departments present themselves. My poster will include a list of conceptual metaphors and a map of their influences and interactions with writing and literary studies, yielding evidence of how the two fields think differently. My hope in sharing my research is to reframe the way we think about the relationship between the two for the benefit of both fields and students.

Bunting, Joshua

Institution: *GA - Georgia Southern University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jonah Henry *Joshua Bunting* *Sevki Cesmeci*

Abstract Name: **An Elastohydrodynamic High-pressure Seal for Super Critical Carbon-Dioxide Power Plants**

Supercritical CO2 (sCO2) power cycles are superior to traditional water-based, air-breathing, direct-fired, open Brayton cycles, or indirect-fired, closed Rankine cycles in terms of efficiency and equipment footprint. They hold great potential in nuclear power production, fossil fuel power plants, concentrated solar power, geothermal power, and ship propulsion. sCO2 power cycles must be demonstrated on the scale of 10–600MWe and at the sCO2 temperatures and pressures of 350–700°C or 20–35MPa for nuclear industries. The lack of suitable shaft seals at sCO2 operating conditions is one of the main challenges at the component level. So far, conventional seals all suffer from the incapability of handling sCO2 pressure and temperature in one way or another. To this end, we propose an elastohydrodynamic (EHD) high-pressure, high-temperature, and scalable shaft seal for sCO2 cycles. The higher the pressures are, the tighter the sealing while sustaining a continuous sCO2 film. For proof-of-concept purposes, a 2" static test rig was designed at Georgia Southern University before the actual dynamic testing at the Sandia National Laboratories. For simplicity, nitrogen gas was chosen, and the tests were conducted at room temperature. The test rig consisted of a 16.5MPa N2 tank; a cylindrical housing enclosing the static shaft and the test seal; steel tubing with compression-type fittings; an OMEGA–PX5500C0-2.5KA10E pressure sensor; and an OMEGA-FMA-1623AI mass flow meter. The static shaft had a diameter of 1.9995" and was made from steel, the test seal was made from PEEK. Data was measured using LabVIEW software and a National Instruments DAQ-Module-NI-9205. The experiments were performed for 50µm initial clearance and inlet pressure increased to 600psi. Initial experiments successfully demonstrated the throttling behavior of the EHD seal. Based on these preliminary results the EHD seal design could potentially be used in sCO2 turbomachinery. US-DOE through STTR Phase I and II grants, no: DE-SC0020851

Buran, Elizabeth

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Elizabeth Buran,
Michaela Nitka

Abstract Name: **Carbon Capture by Icelandic Basalts: A Potential Way to Address Global Climate Change**

Many ecosystems can only survive in a very slim temperature range, but our increased use of greenhouse gasses, such as CO2, change global temperatures significantly. This results in those ecosystems dying off, like coral reefs for example. Iceland currently has one of the largest carbon capture plants in the world. They have implemented a way to take CO2 from the atmosphere and pump it underground.
The research question we will be answering with our project relates to carbon capture. We will be exploring how carbon can be contained within bedrock through multiple experiments and observation of basalt samples.
We collected olivine and basalt samples from the Fagradalsfjall volcano in Iceland. The collected samples were micronized and analyzed with a powder x-ray diffractometer (PXRD) before being exposed to dissolved CO2.
Preliminary results show no change in mineralization after 31 days. This is unsurprising, as a study published by researchers in Iceland showed significant mineralization after running experiments for upwards of 140 days.
Future steps include letting the two existing samples continue to react with the carbonated water, as well as running an additional experiment. This set-up is designed to continually measure pH and CO2 levels in a closed system. We will also use a scanning electron microscope (SEM) to look for any changes on the sample surfaces before and after this set-up. This experiment will attempt to minimize human error while collecting as much data as possible that would indicate mineralization.
The contributing factor of our research would be assisting in ways to lessen climate change. As we know CO2 is a greenhouse gas which largely contributes to the warming of the earth. With scientists discovering new ways to contain CO2, we have the potential to slow global warming.

Burdsal, Savannah

Institution: *VA - The University of Virginia's College at Wise*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Savannah Burdsal

Abstract Name: **Corridos and Boleros as Artistic Representations of Social Reality in Mexico**

From the themes of the songs to the instruments chosen to create a cultural product, music has a fascinating way of becoming a representation of the society that created it. In Mexico, corridos and boleros are two genres that capture the social changes that took place in Mexico in the first half of the twentieth century. War was the constant reality during the Revolution daysDuring the ten years of the revolution a normal life was the dream, and the war was the constant reality surrounding them.After the revolution life went on and changed from people in rural areas moving to the cities and having time for love and imagination. In this presentation, I will discuss how corridos and boleros captured these changes in society. I will analyze how on one hand corridos reflect the violence, death, and loss that were part of the war. Then on the other hand, once the revolution ended and society restructured, bolero depicted a different society in which a love, specifically unattainable love, became the main theme to express. I argue that while corrido focusses on tangible aspects of life, bolero created a fantasy world in which desire and love become the central themes and displays the writers abilty to imaginebeyond reality. As part of my discussion, I will also analyze “La Adelita,” which I see as a transition song in this evolution of these two genres’ production and consumption.

Burgard, Luke

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Physics/Astronomy

Author/Contributors:
Luke Burgard

Abstract Name: **Investigation of Fabrication Techniques for Organic Light Emitting Diodes**

Organic electronics is an emerging field that allows for the construction of high efficiency, thin, mechanically flexible devices. They also show promise as sensors, due to their large, room-temperature magnetoresistive effects. However, the organic layers can be reactive, leading to short lifetimes and device instabilities. We investigated fabrication techniques to improve longevity and performance. Specifically, we focused on the cathode layer of organic light emitting diodes (OLED's), which is vital for the injection of charge carriers into the devicesallowing for conduction,recombination, and light emission. We used different thermal evaporation techniques, materials, heating times and pressures to study the effects on device quality. We then examined our cathode layers using a SEM, confocal microscope and profilometer. These imagining techniques allowed us to identify faults within our device construction. Device performance was measured for stability, efficiency and magnetoresistive effects. We found that tungsten baskets were the most effective way of thermally producing a cathode and that a uniform protective capping layer of aluminum on top of our cathode was essential for our OLED's performance and longevity.

Burgess, Hunter

Institution: *MN - Minnesota State University - Mankato*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Hunter Burgess,
Meaghan Keohane,
Austen Bayne,
Emilie Green,
Samantha Katner,
Stevan Colakovic

Abstract Name: **The Enzymatic Activities Involved in Glypican-3 Shedding in Liver Cancer Cells.**

Liver cancer, specifically, hepatocellular carcinoma isthe third most common cancer-related cause ofdeath and is the fifth most common cancer in the world with about 728,000 cases per year. Liver cancer is very difficult to treat due to many factors that are involved in the generation and progression of the disease, which often results in 14 percent of liver cancer patients having a 5 year survival rate after diagnosis. The aggressiveness of this cancer makes it difficult to treat and diagnose in the early stage of the disease with surgery being primary treatment option. About 70% ofliver cancershave high expression of glypican-3, while normal tissues contain minimal levels. Glypican-3, a protein attached to the liver cancer cell surface, regulates pathways for the growth and migration of cells. Here we investigated enzymes involved in glypican-3 shedding (removal from the tumor cell surface) in liver cancer cells. We used an ELISA (Enzyme Linked Immunosorbent Assay) to measure the amount of glypican-3 shedding occurring in the liver cancer cells when exposed to varying concentrations of specific enzymes. Our results will help in the development of treatment options by targeting enzymes that induce glypican-3 shedding in liver cancers.

Burke, Aspen

Institution: *MT - Montana State University - Bozeman*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Aspen Burke *Christine Foreman* *Markus Dieser*
Donald Smith

Abstract Name: **Determining the Physicochemical Changes of Hydrocarbons Triggered by Biosurfactants**

Surfactants are chemicals that can be produced synthetically or naturally and have many valuable industrial and remediation applications, like helping clean up oil spills. They are amphipathic, meaning they contain a hydrophilic (water-soluble) group, and a hydrophobic (water-insoluble) group. This allows surfactants to reduce surface tension, emulsify liquids, and break down insoluble objects. Surfactants, however, have many environmental hazards as they are toxic and cannot easily biodegrade. Biosurfactants on the other hand, are naturally produced by microorganisms, are low in toxicity, biodegradable, and are overall more eco-friendly. Over the past year, 38 microorganisms from the Foreman Research Groups isolate collection were screened for biosurfactants. Out of the 38 microorganisms, 16 have been found to be biosurfactant producers. In order to further characterize these biosurfactants, the biosurfactants were extracted, purified, and putatively identified using MALDI mass spectroscopy. These biosurfactants were found to be potential dirhamnolipids, sophorolipids, monorhamnolipids, and surfactins. I am now working on finding the exact chemical formula and surfactant types by characterizing the 16 prominent biosurfactants in much more depth, using MS/MS, as well as thin-layer chromatography.Biosurfactants have also been shown to play a role in carbon and nutrient turnover in cold temperature environments by increasing the bioavailability of complex organic hydrocarbon and aromatic compounds and improving the habitability of the environment. Biosurfactants can alter the surface charge, reduce surface tension, and emulsify hydrocarbons, which I hypothesize can counteract typical low temperature induced chemical changes and enhance the bioavailability of these complex carbon compounds. In order to see if biosurfactants can chemically modify petroleum compounds, I am working on investigating compositional changes in hydrocarbon samples using UV-Vis absorbance and fluorescence spectroscopy to determine optical properties, aromaticity and degradation status. Results from MS/MS, TLC, UV-Vis absorbance, and fluorescence spectroscopy will be presented.

Burnett, Isabeau

Institution: *IL - University of Chicago*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Isabeau Burnett

Abstract Name: **Examining Racial, Ethnic, and Sex Differences as Predictors of Cannabis Use Disorder Treatment Retention**

Background: Treatment trials for cannabis use disorder (CUD) lack racial, ethnic, and sex representation. This limits the generalizability of study results and reduces access to effective therapies for underrepresented groups. While racial, ethnic, and sex differences have been explored for treatment outcomes, no literature to date has explored if underrepresented groups are being retained in research at the same rates as their non-minority counterparts. The goal of this secondary analysis is to identify racial, ethnic, and sex differences in retention in CUD treatment trials. Methods: This secondary analysis used a combined data set of seven pharmacotherapy treatment trials for CUD conducted at MUSC (five completed, two enrolling; N=948). The final dataset is 30% female; 27% African American; 11% Hispanic/Latinx. Retention was defined as completing the end of treatment visit (yes/no) and number of days engaged in the study. Mixed effects logistic regression models were utilized to assess for differences in study completion across minority groups. Results: In adjusted models, Non-Hispanic White participants were more likely to complete treatment than all others combined (66% vs. 59%; OR=1.4 (1.0, 1.9); p=0.04). This difference is primarily driven by Non-Hispanic White females (73% v. 58%; OR=2.0 (1.2, 3.4); p=0.01) as compared to all minority races. Non-Hispanic Black/African American participants had similar odds in treatment completion compared to other minority races (p=ns). Although Non-Hispanic White females had greater odds of completion than minority females, there were no overall differences between males and females (62% vs. 66%; OR=0.8 (0.6, 1.1); p=0.17). Conclusion: Results suggest that sex differences do not independently contribute to study retention, but that racial and ethnic minorities have lower retention rates- showing that one of the barriers to diversity in research is retention, not just recruitment. Future retention efforts in CUD treatment trials should ensure special attention is paid to retaining racial/ethnic minorities.

Burnett, Jeremy

Institution: *MO - Missouri State University*

Discipline: English/Linguistics

Author/Contributors:
Jeremy Burnett

Abstract Name: **Writing to Survive: Establishing writing workshops for working class communities**

There is a widening gap between working class culture and academic culture. Elitism in the classroom has left working class students feeling unwelcome. But miscommunication between cultures inhibits attempts to bridge the gap. A collective writing voice can serve as a tool to better express the community's needs. This paper proposes specialized writing workshops for working class students to aid the development of collective creative voices. These proposed workshops will tailor itself to the student communities it serves. Working class students will be able to decide the focus of their workshops as a group. They can choose to work on creative projects, as well as resumes and grant opportunities. Further research into grants and scholarships can introduce resources into communities through writing. Student directed workshops have succeeded in the past. This paper provides a review of previous successful workshops, such as the Workshop on American Indian Affairs. And it will look at Peter Elbow's foundational workshop techniques in his book Writing without Teachers. The works of blue collar writers may give students inspiration; such as Philip Levine, Johnny Cash, Tillie Olson, and others. Working class writers should feel they have opportunities to write to survive.

Burnett, Logan

Institution: *AL - University of Alabama at Birmingham*

Discipline: Physics/Astronomy

Author/Contributors:
Logan Burnett,
Cheng-Chien Chen,
Yogesh Vohra

Abstract Name: **Pressure Evolution of the Hubbard U in Rare-Earth Metals via the Linear Response Approach**

Calculating the properties of rare-earth metals using ab-initio methods is an important component in understanding these strongly correlated materials. Traditional density functional theory (DFT) calculations are insufficient in describing their properties and phase transitions due to electronic correlation effect. On the other hand, the DFT+U approach is a more robust method for obtaining experimentally-consistent electronic and magnetic structures. One critical question, however, is how to determine the Hubbard value from first principles. Here, we employ the linear response approach to calculate the effective U for various rare-earth metals. We study how the U value evolves as a function of unit cell size and structure type. The pressure evolution of the Hubbard U is calculated using both experimental unit cell and DFT relaxed crystal structures. The resulting U values provide important input information for DFT+U calculations to understand the behavior of rare-earth materials and their applications in extreme pressure environments.

Burnette, Christina

Institution: *AR - Arkansas State University*

Discipline: Communication Science and Disorders

Author/Contributors:
Grace Carter,
Blair Casey,
Christina Burnette

Abstract Name: Apple iWatch Noise Meter Accuracy: Can We Make "Sound" Judgements on the Noise Alerts?

Background: Noise-induced hearing loss is a permanent type of hearing loss that is a result of loud noise exposure over time. The effects of noise-induced hearing loss often go unnoticed until irreversible damage is already done. To prevent individuals from developing noise-induced hearing loss, mobile phone companies like Apple have developed a noise monitoring application (app) for the AppleiWatch which alerts individuals when they are in the presence of dangerous noise levels. It is extremely important that this application provides accurate noise alerts to the user so that appropriate measures can be taken to limit the exposure level and/or duration. The aim of this study is to measure how accurate the noise measurements of the Apple iWatch are. Methods: Noise levels will be measured atsixteen different locationsusing various models of Apple iWatches. These measurements will then be compared to measurements obtained by the iPhone app, theNational Institute of Occupational Safety and Health (NIOSH) noise meter appwhich has been found to provide noise measurements within +/- 1 dB ofLarson Davis type 1 sound level meter (Kardous and Shaw, 2016).The noise levels in each environment will be measured by both the iWatches and the reference iPhone NIOSH noise meter app. Measurements will be compared for each environment and analyzed for significant differences in order to determine how accurate the iWatch measurements are.Data will be collected and analyzed Spring 2023 pending IRB approval.

Burney, Erin

Institution: *AR - University of Arkansas*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Aisha Al-Rizzo *Patience Okoto* *Dr. Suresh Kumar*

Abstract Name: Design of a Novel Decoy FGF2 with Increased Stability and Cell Proliferation Activity

FGF2 is a multifunctional growth factor, part of the highly conserved superfamily of fibroblast growth factors. In particular, FGF2, found in embryonic and adult cell types, plays a significant role in the development and function of multiple organ systems. Furthermore, FGF2 plays roles in angiogenesis (blood vessel formation) and wound healing, which show promise in medical applications and tissue engineering. Although promising in its potential, wild-type FGF2 itself poses issues of inherent instability, which affect its overall function. By generating a recombinant protein, consensus, or "decoy" FGF2, the problem of instability in wild-type FGF2 can be solved. Consensus FGF2 can help in creating a more stable protein, thus improving function over time, as structure correlates to effectiveness in function. By eradicating this issue, a higher stability in FGF2 can be applied to biochemical and medical industries, to name a few. For example, thermal instability wouldn't be an issue with a more stable FGF2 protein when considering external factors, such as the supply chain when transporting for further biochemical research and medical applications. Thermal stability, as found in preliminary results,also indicatesa longer shelf life, if used in potential medical applications. Overall, the aim of this project is to improve the stability of wild-type FGF2, a potent but unstable fibroblast growth factor, thus improving its function via experimentative methods of small-scale and large-scale expression, purification, and characterization of structure and stability. In short, the goal of the experimental design is to compare cell proliferation activity of wild-type FGF2 and consensus FGF2 with analyses of structure and function. The ability to solve the problem of instability, which was already suggested via initial findings, in FGF2 by fabricating a more stable and functional growth factor can open new doors for further research and breakthroughs in the fields of biochemistry and medicine.

Burns, Amelia

Institution: *CA - California Institute of Technology*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Amelia Burns

Abstract Name: **The Effect of Cultivation Season on Mechanical Properties of 3D Printed Spirulina Biomass**

Spirulina (blue-green algae) is a cyanobacteria which has been identified as a potentially valuable biomass source to replace plastics and wood in the packaging and construction industries, due to its abundance and environmental sustainability. This project uses 3D printing to produce samples of pure dehydrated spirulina biomass to understand the relationship between spirulina cultivation conditions, chemical composition, and mechanical properties of the resulting material. We compare properties of samples printed from two different crops of spirulina that were cultivated during two different seasons (spring of 2022 and summer of 2021). We found compositional variations between the different spirulina crops: the crop cultivated in the summer had a significantly higher proportion of proteins, and a slightly higher proportion of carbohydrates. These compositional differences are concluded to be the main contributor to differences in the flexural and rheological properties of 3D printed samples as a result of the higher inter- and intramolecular interactions in the proteins in the material from the summer crop. The promising flexural properties of the samples indicate that microalgae is a promising resource for potential use in biocomposites to fulfill the material demands of structural materials.

Burns, Kathryn

Institution: *IA - Iowa State University*

Discipline: **Political Science**

Author/Contributors:
Kathryn Burns,
Sarah Hannon

Abstract Name: **That's like the inherent sexism that we all deal with: Women's experiences running for office**

This research examines the differences women and men face when they enter the political field. Special emphasis was placed on women's experiences with sexism as they decide to run for office and throughout the election cycle. Previous studies indicate that women in politics perceive their qualifications to be less than those of their male counterparts, and men were more likely to say they were very qualified (Fox; Lawless, 2004). Previous research also showed that women were more likely to experience imposter syndrome than their male counterparts (Weir, 2013), and indicate that women feel less comfortable than men when doing political activities like door-knocking and fundraising (Fox; Lawless, 2012). This mixed-method study adds to previous research by analyzing how political communication affects cultural perceptions and how these perceptions affect the experiences of women who run for office. We collected data through surveys of both men and women who held office in Iowa, interviews with women with past or current political experience in Iowa, and conducted a content analysis of political advertisements. Our results offer updated insights that show an improvement in women's self-perception of their qualifications and give insights about how the imposter syndrome in the political pipeline shifts as women are encouraged to run by those who are already in political office. We also share new insights on how the sexism women experience regularly prepares them to overcome this barrier on the campaign trail.

Burright, Jack

Institution: ***NE - Creighton University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Jack Burright,
Samer Al-Khateeb

Abstract Name: Utilizing Netlogo to Simulate Mobs: An Agent-based Modeling Approach

Agent-based modeling (ABM) is a powerful research tool that is used in a plethora of fields ranging from cargo routing to Artificial Intelligence. A mob is an event where a group of individuals get together online or offline (or both) to conduct an act which can range from a collective dance in a mall to collectively breaking cars' windows or hacking an electric grid. We posit that a mob can be simulated using ABM and the constructs of the collective action theory, which is defined as all activities of common or shared interest among two or more individuals. Mobbers could face various scenarios when it comes to acting in a mob or not. In this research, we build an ABM using NetLogo, that can simulate a mob. The model specification is set according to a previously published work on the logic of collective action where a mobber in the model can: act, withdraw, do power exchange (to gain utility), or act against the mob. Given the number of invited people, the number of powerful agents (e.g., organizers), and a threshold for the mob to succeed, all the mobbers in the model can decide and act accordingly. If the participation rate of the mobbers reaches a certain threshold, the mob will be marked as successful, otherwise, it will be marked as failed. Building an ABM model of the mob based on a social science theory serves as a new method to study the mob and understand the behavior of its participants. These participants form cyber-social groups on social media that act collectively online or offline. Their acts can sometimes lead to violence or societal conflicts. Understanding the mob phenomenon will lead to understanding similar collective action-based phenomena, e.g., social movements, propaganda/disinformation campaigns on social media, organized violent protests, etc.

Burriss, Jamie

Institution: ***TN - Middle Tennessee State University***

Discipline: Education

Author/Contributors:
Leslie Gonzalez Salazar,
Brooke Busbee,
Jamie Burriss

Abstract Name: READY (Research Experience Activity Designed for Youth) to SOAR Program and its Impact on Area High School Students

Very few university-wide programs offer high school students the opportunity to experience undergraduate researchprior to enrolling in higher education courses. The READY(Research Experience Activity Designed for Youth)to SOARprogram at Middle Tennessee State University (MTSU)was piloted during the 2021-2022 academic year and presented area high school students with an opportunity to visit campus for an immersive research and creative activity experience. The goal of the program is to showcase MTSU's undergraduate research opportunities to potential students through a single-day engagement event. To enlighten our understanding of how high school students view undergraduate research, we will be administering a pre/post questionnaire to all participants. Our research questions surrounding this experience include the following: What is their current perspective on the terms"research" or "creative activity"? What is their level of interest in pursuing research as a future undergraduate student? And finally, what is their intended area of study, if known? The results of this study will aid ourteamin programmatic planning for future READY to SOAR events, help us to better understand howhigh school students perceive undergraduate research,and their level of interest in becoming involved in undergraduate research.

Burton, Jena

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Communication Science and Disorders

Author/Contributors:
Jena Burton,
Mackenzie Scheibel,
Sabine Heuer

Abstract Name: Understanding Word Finding in Older Adults; Image Naming Norms Across the Age Range

Introduction: Image naming tasks are used to better understand the linguistic processes of word finding in people without and with neurologic communication disorders such as aphasia and dementia. Neurologic communication disorders become more common with increasing age. However, word finding is affected in both, healthy aging adults and people with neurologic disorders. Therefore, norms for image naming in older adults are important for defining what constitutes normal performances and to refine markers for impaired word finding. To date, norms for image naming in older adults are lacking. The purpose of this study is to provide norms for older adults free of neurologic impairments on a large set of photographs of everyday objects, normed on younger adults, the Bank of Standardized Stimuli (BOSS).Methods: Thirty-five participants were recruited. All are native speakers of English, at least 50 years old, and free of neurologic deficits. Each participant was presented with 600 photographs derived from the BOSS on a computer screen and was asked to name each image as quickly and accurately as possible. The responses and response times (RT) were recorded. Accuracy, RT, modal name, and name agreement were analyzedResults: Preliminary results revealed a mean accuracy of 82.48% and a mean response time of 2.204 ms. Modal name agreement indicated an overall 66.34 % agreement across the 600 stimuli. The sample's demographic composition and an analysis stratified by 10-year age bands will be presented.This is one of few studies that provides norms for image naming for adults 50-80 years of age. We aim to collect data for60 older adults. Norms across the age range for image naming are a critical prerequisite for behavioral research that tackles theoretical as well as clinical questions.

Busbee, Brooke

Institution: ***TN - Middle Tennessee State University***

Discipline: Education

Author/Contributors:
Leslie Gonzalez Salazar,
Brooke Busbee,
Jamie Burriss

Abstract Name: READY (Research Experience Activity Designed for Youth) to SOAR Program and its Impact on Area High School Students

Very few university-wide programs offer high school students the opportunity to experience undergraduate research prior to enrolling in higher education courses. The READY(Research Experience Activity Designed for Youth)to SOAR program at Middle Tennessee State University (MTSU) waspilotedduring the 2021-2022 academic year and presented area high school students with an opportunity to visit campus for an immersive research and creative activity experience. The goal of the program is to showcase MTSU's undergraduate research opportunities to potential students through a single-day engagement event. To enlighten our understanding of how high school students view undergraduate research, we will be administering a pre/post questionnaire to all participants. Our research questions surrounding this experience include the following: What is their current perspective on the terms"research" or "creative activity"? What is their level of interest in pursuing research as a future undergraduate student? And finally, what is their intended area of study, if known? The results of this study will aid our team in programmatic planning for future READY to SOAR events,help us to better understand how high school students perceive undergraduate research,and their level of interest in becoming involved in undergraduate research.

Bustillos, Carlos

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: Chemistry/Materials Science

Author/Contributors:
Carlos Bustillos,
Victor French,
Jerry Godbout

Abstract Name: USE OF X-RAY FLUORESCENCE TO MAP COLORANT COMPOSITION IN CRYSTALLINE GLAZES

Crystalline glazes are ceramic glazes that are designed to trigger the growth of macroscopic crystals which can reach sizes of several centimeters in diameter. The main metallic component of the glazes is zinc, and third-row transition metals such as copper, nickel and cobalt are added at single percent-by-mass levels to generate colored macrocrystals. While the glaze application is generally homogeneous, the macrocrystal formation is not. Two-dimensional maps of the elemental composition of the glazed surfaces are created using XRF spectrophotometry. These maps detail the flow and aggregation of the colorants during the firing process, and provide some insight into optimizing the seeding process of the macrocrystals.

Butler, Ayanna

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alexa Brown *Ayanna Butler* *Treasure Evans,*
Emelyn Martinez *Quinn McKeever* *Tray Jackson*

Abstract Name: Trauma, Personality, and Growth: Examining the Role of Personality on Posttraumatic Growth

The Anxiety Buffer Disruption Theory (ABDT), an extension of the Terror Management Theory (TMT), suggests that posttraumatic stress disorder (PTSD) is a result of the disruption of one's anxiety-buffering mechanisms. This disruption can lead to overwhelming emotions, hyperawareness of one's mortality, and wide-ranging reactions to traumatic events. However, the anxiety-buffer system mitigates the effects of potential terror, promotes posttraumatic growth (PTG), and is comprised of three components: cultural worldviews, self-esteem, and close personal relationships. The success of posttraumatic growth may also stem from personality traits, such as those that can be measured by the Five Factor Model, of the individual that has experienced the traumatic event, which is the focus of this current study. Past research has shown that those who score high on the scale of Neuroticism have a higher risk of developing PTSD (Cyniak-Cieciura et al.,2022), however, there has not been much research on the personality traits that would promote posttraumatic growth. To date, no research has directly assessed the relationship between personality and posttraumatic growth. Identifying these traits could direct the focus toward cultivating specific characteristics within the traumatized individual in hopes of creating a better outcome. This study aims to identify which Big Five Personality Traits are associated with posttraumatic growth. A sample of N=300 individuals with above threshold PTSD symptomology (PCL-5 scores > 34) will be recruited via research panel to examine the relationship between personality and posttraumatic growth. All participants will complete a Qualtrics survey including demographic, PTG, and anxiety buffer questionnaires. We hypothesize that high scores in openness, extroversion, and agreeableness will be primary characteristics of those who present more posttraumatic growth.

Butler, Branden

Institution: ***IA - Iowa State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Branden Butler

Abstract Name: CMinx: A CMake Documentation Generator

As software projects grow ever larger, build systems to compile such projects must grow with them. CMake is the defacto build system for C and C++ projects, but for large-scale projects, the complexity of CMake code grows to the point of incomprehensibility, as there is no built-in support for documentation. CMinx aims to rectify this by allowing inline documentation comments to be compiled into full documentation pages, much like C's Doxygen or Java's Javadoc. CMinx utilizes an Antlr grammar to parse and lex a CMake file, allowing a far greater understanding of the surrounding context than other CMake documentation generators. Thanks to this understanding, documentation authors can allow CMinx to automatically generate signatures of documented or even undocumented function or macro definitions. CMinx also includes support for documenting CTest tests. The generated documentation is output as reStructuredText using the Sphinx dialect, and can then be included in other Sphinx documentation files. CMinx is in active use in other Ames National Laboratory projects including CMakeTest and CMakePackagingProject. Its use has accelerated development, as contributors no longer need to read the CMake code directly to understand it and no longer need to spend inordinate amounts of time writing documentation manually.

Buttke, Agnes

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Melissa Knopps,
Josie Jacobson,
Agnes Buttke,
Gabi Bowe-Hanson,
Gracie Hering

Abstract Name: Expressions of Cultural Identities

How might expressions of cultural identities take shape through language, stories, and other learning experiences in an elementary classroom? If preservice educators listen intentionally to the expressions of elementary students, will those studentsshare about their diverse backgrounds and cultural identities? Can these conversations support the classroom in an effort to be more culturally responsive? We will partner with a local elementary school and spendtime on site conferring withstudents about theirperceptions and contributions, connecting students' cultural knowledge to themselves and others through multimodal learning experiences, and gatherdata that will influencefuture teaching practices. Multimodal instruction is instruction that uses social and cultural resources such as drawings, technology resources, picture books, and storytelling. Student voice is listening attentively to students' perceptions and contributions.Cultural identity is the perception of self and others, and how children see themselves as a member of a group.

Buxton, Ben

Institution: ***GA - Kennesaw State University***

Discipline: Business

Author/Contributors:
Matt Hammer *Ben Buxton* *Lauren Pederson,*
Juan Gonzalez *Celina Duong*

Abstract Name: Why are Restaurant Firms are Going Private? Going Private Transactions and Stock Returns of Restaurant Firms

Access to capital markets is one of the key benefits of becoming a publicly traded company. However, previous research has shown that companies in more recent years have returned to the private sector rather than staying public after the initial public offering. While existing research found numerous reasons for going private, there is a limited number of studies that identify factors that influence the shareholder returns of the decision to go private. This study attempts to uncover external and internal factors that affect shareholder returns. Our study includes U.S. restaurant companies listed under Standard Industry Codes 5810 and 5812 between 1995 and 2021. Our initial sample consisted of 80 firms that had a delisting code 231. Because some of these delistings were for firms that went bankrupt, the final working sample includes 74 firms. Data on going private transactions will be obtained from media outlets and SEC annual filings (10-Ks). Data for the dependent variable (shareholder stock returns) is available in The Center for Research in Security Prices (CRSP). Potential independent variables in our study are firm size, level of undervaluation, governance issues, executive team structure, board composition, etc. Regression analysis will be used to explain the variance in shareholder returns. This study expects that board composition and the executive management structure, will emerge as important factors beyond traditional variables such as firm size as determinants of shareholder stock returns. The findings of this research study can provide important implications for firm executives who are considering going private and private equity investors who are trying to identify the best target firms that can be taken private.

Bynaum, Savannah

Institution: ***TX - Tarleton State University***

Discipline: Social Work

Author/Contributors:
Sydney Mangold,
Savannah Bynaum,
Erica Duran,
Vianca Medina

Abstract Name: Diversification Factors Affecting Meal Service Recruitment

This study focuses on exploring the impact of diversity at Meals on Wheels and the factors involved in the limited number of participants of color who are part of the underserved population.There are clients that are unable to communicate with the agency because of language barriers. The type of research design is exploratory. The research explores a new topic and seeks to discover the effect that Meals on Wheels staff has on clients. Researchers created a 17-question survey that included open ended and closed ended questions to ask 100 community residents of color.

Byrne, Bradley

Institution: ***VA - George Mason University***

Discipline: Communication/Journalism

Author/Contributors:
Bradley Byrne

Abstract Name: Source preference for world news among college students: The role of cultural and political background

There is little research on how United States college students view world events and what news sources they tend to gravitate toward to inform themselves about events on the other side of the world.This study is guided by Confirmation Bias theory, which explains why people choose information and media that already reinforces their beliefs. This study will explore what kind of college students will use sources like Fox News and Breitbart over CNN and the New York Times, and vice versa, to consume world news.This study is interested in investigating the relationship between United States college students' cultural and political backgrounds and how they choose world news sources. The study will be conducted with students from George Mason University, which is the most diverse college in the state of Virginia.The study will be done through a 12-question questionnaire that will be distributed to college students at George Mason University through an online survey. The target sample size for the study will be at least 100 student responses. The research question of the study will be addressed by evaluating the relationships between cultural/political backgrounds of students and their selection of news sources for world news.The data for this study are anticipated to be collected and analyzed by the end of February 2023.It is important to see how the young minds of tomorrow are becoming versed in international and world events. With an ever-growing population in a diverse country like the United States, college students should get an education that makes them curious and informed about world topics while also overcoming the influence of confirmation bias. Findings of this study will be useful to such educational efforts.

Byrnes, Erin

Institution: ***FL - Jacksonville University***

Discipline: Communication/Journalism

Author/Contributors:
Erin Byrnes,
Abigail Neff

Abstract Name: La Bella Vita: Rediscovering Community in a Post Pandemic World

Following the 2020 COVID-19 pandemic, many students continue to struggle with engagement outside of online activity and the classroom, returning to pandemic comfort zones. In a smaller university community, such as Jacksonville University, and across a variety of majors, students self-selected to participate in a five-week study abroad program during the summer of 2022 on location in Southern Italy. The purpose of this video project is to creatively share undergraduate student stories about how participation in the Communication, Culture, and Amalfi Coast program reignited student participation through engaged learning, while fostering a sense of community among the group. This creative work explores student understandings of the influence of social components on individual learning and the effect these social learning communities have on student health and well-being. Through qualitative video interviews with the Jacksonville University study abroad participants, students share their cultural experiences, discuss observations, and explainthe personal growth that took place because of this program. Presented over a series of videos stories, this project is a compilation of student narratives focused on growth through personal experience and global understanding. This project was produced on the campus of Jacksonville University and on location in Southern Italy. Featuring in-depth interviews, digital content creation, and personal artifacts from the study abroad program, the participants explain how the experience changed their understanding and helped them reconnect to a vibrant engaged learning community. This project includes on-camera interviews and video content produced as part of an advanced communication course.

Cabezas, Laurent

Institution: ***FL - Miami Dade College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Laurent Cabezas,
Giuliana Mesa

Abstract Name: Undershot Waterwheel Energy Optimization

A waterwheel is a device that is used to take advantage of the energy produced by flowing water. In locations where the water flows horizontally, referred to as low-head conditions, an “undershot waterwheel” is employed. The head of a location is by definition the height difference between the point in which the water enters the system, and the point at which the water leaves the system. Taking into consideration the value for the head (v22G) of the location, the optimal overall diameter (3 to 6 times the head) of the wheel can be determined. We can take advantage of the low speed caused by the low- head conditions by designing a wheel with an optimal number of blades. The rationale for this lies in the fact that a higher number of blades would increase the torque, and consequently, the kinetic energy. The optimal number of blades is determined by the ratio between the working circumference and the head, where the working circumference is the difference of the overall diameter and the head multiplied by . This project aims to evaluate the effect that: 1. The number of blades, 2. The thickness and 3. The flow of water, will have on the energy production of the system. We will test each alternative design for the system individually, as well as collectively.

Cabrera, Roswell

Institution: ***NJ - Bloomfield College***

Discipline: English/Linguistics

Author/Contributors:
Ciara Donaldson,
Roswell Cabrera

Abstract Name: Challenging the Tyranny of Love: Video Game Design and Critical Metaphor Studies

Language is a means of connecting and communicating effectively. Language allows us to identify with others, and make sense of the world around us. But how do we accurately describe something? Friedrich Nietzsche writes of the will to truth in language, that it is, “A movable host of metaphors, metonymies, and; anthropomorphisms: in short, a sum of human relations which have been poetically and rhetorically intensified, transferred, and embellished, and which, after long usage, seem to a people to be fixed, canonical, and binding” (4). In other words, we conceptualize much of our existence through rhetorical language, but most importantly, for the purpose of our presentation, in metaphors.Oftentimes, metaphors serve as a dominant understanding of something, especially metaphors of love. And some of these can be quite troubling, setting up love as something to be endured, tackled or overcome: Love is often metaphorized as a journey, a battlefield, a roller coaster, even a drug.As students of game design, our presentation will focus on our design of a “serious game” that both entertains an audience, and teaches them about how metaphorical language has the power to shape prevailing conceptions of love, which, as philosopher Alain de Botton suggests, have dominated Western sensibilities since the Romantic Era. In this particular game, players make choices about a metaphor of love that they associate with the most at the outset, but they might also adopt alternative metaphors of love depending on the decisions they make during the game. The game’s purpose is to entertain and educate the player on the power of language to shape meanings about a universal human phenomenon and its meaning in contexts.

Calderon, David

Institution: *CA - California State University - San Bernardino*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Rick Bhaskara *Rey Zavala* *David Calderon*

Abstract Name: **Development of Photocrosslinking Click Chemistry Probes to Investigate the Function of Falcilysin, an Essential Malarial Metalloprotease**

Human malaria is a parasitic disease caused by 6 different Plasmodium species, leading to approximately 600,000 annual deaths. All clinical symptoms of the disease result from the intraerythrocytic development of the parasite. During this part of the life cycle, the parasite expresses an array of proteases to carry out many essential processes, such as host cell protein degradation, host cell invasion, and parasite protein export. Falcilysin (FLN) is an essential metalloprotease expressed by the parasite during intraerythrocytic infection, and it is known to function in host hemoglobin degradation and in processing of apicoplast-targeted parasite proteins. Recent studies have identified FLN as a target of the clinical antimalarial drug chloroquine, and it appears likely that the protease carries out additional roles in the cell.We are developing chemical tools to enable further investigation of FLN biology and its potential as a chemotherapeutic target. Here we report our work to synthesize and evaluate a series of piperazine-based hydroxamic acids as inhibitors of FLN. As well as incorporating photocrosslinking and click chemistry moieties into the scaffold. These studies will provide the rationale for the development of increasingly potent FLN inhibitors while identifying possible off-targets in the cell. This work builds upon our previous research by further optimizing the N1 position on the piperazine core. We synthesized and tested a series of 10+ compounds with diverse substituents which were installed using a range of synthetic methodologies. In a subset of compounds we incorporated diazirine and alkyne moieties to enable identification of cellular targets using a combination of photocrosslinking and click chemistry. All compounds were tested against cultured parasites and purified FLN, and we identified additional structural requirements for potent inhibition of FLN. Multiple inhibitors were discovered with similar or improved potency relative to our previous lead compounds.

Callahan, Caitlin

Institution: *GA - Kennesaw State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Caitlin Callahan *Adriana Williams* *Kaylan Hopson*
Kevin Toler *Sarah Weeks* *Audrey Harris*
Maya Maqousi

Abstract Name: **The Impact of Discrimination, Community Support, and Class Modalities on Burnout in College Students**

What effects do class modality, perceived community, and perceived discrimination have on burnout scores in college students? Past research has found that students with more marginalized identities reported more instances of mistreatment and discrimination during medical school, which appeared to be associated with higher burnout (Teshome, 2022). Research has also shown that there is a positive relationship between community support and positive mental health (Hu et al., 2020). There is a gap in the literature in student burnout in association to these variables, which we plan to explore. The current study investigated the interaction of a student's class modality, perceived discrimination (from faculty and peers), as well as perceived social support, and if this influences burnout scores. Students will receive a survey asking about their class modality (online, in-person, hybrid) and will also be asked questions from the Maslach Burnout Inventory, Everyday Discrimination Scale, and SC Perceived Community Scale. The Maslach Burnout Inventory is the leading burnout indication measurement (Maslach, 1997). The Everyday Discrimination Scale (Williams, 1997), published by Harvard University, is the original and still recommended scale for daily occurrences of discrimination. These scales will deliver data that allows us to quantify burnout, perceived discrimination, and perceived social support. We will be distributing a survey through Qualtrics which we plan will receive around 120 responses from students at Kennesaw State University. We hypothesized that students who feel more perceived discrimination will have higher levels of burnout and less sense of community. We also hypothesized that students who feel a strong sense of community will have lower levels of burnout and lower levels of perceived discrimination.

Callahan, Cavan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Jialin Xu *Liang Li* *Cavan Callahan*
Elizabeth Glogowski

Abstract Name: **Viscosity and Viscoelastic Behavior of Stimuli-responsive Copolymers for Use as Dispersants in Architectural Coatings**

Viscosity and viscoelastic properties are important for the application of stimuli-responsive polymers as dispersants in architectural coatings such as paints. Viscosity is a fluid's resistance to flow under stress, while viscoelastic materials exhibit solid-like elastic or liquid-like viscous behavior depending on experimental conditions. New stimuli-responsive polymers, which change their properties in response to changes in temperature, pH, and mechanical environments, could affect the dispersion of opacifying particles such as titanium dioxide in the coating. By adding stimuli-responsive polymers, the properties of architectural coatings can be controlled to produce a more opaque coating with controlled viscosity. This decreases costs and reduces environmental impact. A rheometer is used to test a polymer's viscoelastic properties under different pH, temperature, shear rate, and frequency conditions. Understanding how viscoelastic properties change in response to external conditions is necessary for matching these polymer properties to properties needed for architectural coatings. Viscosity testing is used to determine how well the polymer will mix with titanium dioxide particles. Ideally the coating will have the lowest polymer concentration and lowest viscosity possible to meet performance needs. Viscosity tests help determine where this minimum occurs for different copolymers. This can help determine which polymer is most suitable for dispersing titanium dioxide particles. Viscosity and viscoelastic testing can allow for determination of how changes in polymer structure result in changes in stimuli-responsive properties. The copolymer structures can be tuned, and the properties can be predicted in order to optimize properties for architectural coatings. This results in new materials to meet performance requirements to compete with traditional, commercially available dispersants.

Callan, Reuben

Institution: *VT - Norwich University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Reuben Callan,
Quinn Bennett,
Emma Ste. Marie

Abstract Name: **Synthesis and Evaluation of Sel-Sepharose Resin for Redox Proteomics**

This project is focused on designing and synthesizing a unique chemical tool that will allow for the detection of persulfide modifications in proteins. These modifications are challenging to detect due to their chemical reactivity and low biological abundance. Persulfide modifications on proteins occur from exposure to hydrogen sulfide gas. Hydrogen sulfide gas is produced by human cells during normal cell function and some disease states trigger the production of this gas. Proteins can also undergo these modifications if exposed to hydrogen sulfide gas from their environment. Herein, we designed and synthesized a resin that contains a unique diselenide moiety that can bind to protein thiols and thus, the persulfide modification. Our resin is unique since the removal of bound proteins can be accomplished by addition of ascorbate (Vitamin C), which facilitates a chemoselective reduction of selenium-sulfur bonds. Use of Vitamin C as our reducing agent will allow for the retention of the persulfide modification, which can subsequently be detected by mass spectrometry. Our resin has broad applications in the field of Proteomics and in the diagnosis of diseases that are known to generate hydrogen sulfide gas.

Callies, Benjamin

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Physics/Astronomy

Author/Contributors:
Benjamin Callies,
Hayley Schultz

Abstract Name: **How Radiation Pressure Affects Large Mirrors Orbiting Exoplanets of Different Mass**

Exoplanets can be found using the transit method, where light curves with regular changes indicate the presence of an exoplanet. As discussed by Korpela, Sallmen, and Green (2015), such light curves would be affected by a cloud of mirrors launched by an intelligent extraterrestrial species to redirect starlight to an exoplanet. The mirrors could be used to terraform exoplanets, including those with only one side facing the star. These tidally locked planets occur when the planet's orbit period is equal to its rotational period. When they are large and lightweight, mirrors such as this are affected by the force of photons emitted by the star, known as radiation pressure (RP). To investigate their orbit stability, we simulated a mirror orbiting an Earth sized planet at the inner edge of the habitable zone around a variety of long-lived stars, so the planet is more likely to be tidally locked and to possibly contain liquid water. RP strongly affects our simulated planar mirror of 1 km2and 1000 kg. We simulated situations when RP always affects the mirror (Always) and when RP only affects the mirror on the dark side of the planet (Night), comparing the results to the situation with no RP. We also vary mirror orbit sizes; orbit orientations. For each simulation, we determine the mirror's end state: whether the orbit ends in collision with the planet, escapes the planet's gravitational influence, or survives 1000 orbits. With only a small change in initial orbit size, a mirror's end state can change drastically due to a small difference in radiation pressure and gravitational forces. For some of these situations, we will present a comparison of our previous simulations with results for mirrors orbiting planets of different masses.

Caluri, Grace

Institution: *NC - Elon University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Grace Caluri *Jeppe Overgaard Jordoson* *Sophia Solan*

Abstract Name: **Alibi Believability and Judicial Instructions: The Role of Prosecution and Alibi Evidence**

Alibi claims can be supported by evidence that suggests the defendant did not commit the crime, known as exculpatory evidence (Olson; Wells, 2004). Alibi evidence can be countered by prosecution evidence, known as inculpatory evidence (Culhane; Hosch, 2004). Judge's instructions on the alibi defense may also affect juror views of alibis, but they have not been studied empirically. Alibi instructions inform jurors that the onus is on the prosecution to disprove the defendant's alibi (Connecticut Judicial Branch, 2019). 320 participants recruited from CloudResearch took part in this study where they read a description of an arson, police investigation, and trial. They were randomly assigned to one of eight conditions in a 2 x 2 x 2 between-subjects design. Half of the participants read that the defendant had videotaped store footage to support his alibi (alibi evidence present) and half read nothing about the footage (alibi evidence absent). Participants then read that investigators found empty gasoline containers in the defendant's car (prosecution evidence present) or read that nothing incriminating was found in the car (prosecution evidence absent). Participants either read the judge's instructions on alibi evidence (instructions present) or did not read any instructions (instructions absent). Next, participants completed a questionnaire in which they rated the alibi's believability and the defendant's character. They also individually rendered a verdict. Alibis were more believable when no prosecution evidence was found in the defendant's car versus when gas cans were found. Alibis were also more believable when the defendant had store footage to support his alibi versus no mention of footage. Having alibi evidence also led to more positive views of the defendant (more likeable, credible, etc.). The majority of participants (76%) voted not guilty and none of the independent variables affected verdict decisions. Future directions will be discussed.

Camarena, Mayra

Institution: ***TX - Tarrant County College***

Discipline: **Nursing/Health Science**

Author/Contributors:
Mayra Camarena *Adrian Ramirez* *Lizzeth Sanchez Gutierrez* *Ashlee Webster*

Abstract Name: **Location of cartoid body oxygen sensors in the Alligator mississipiensis**

This research sought to identify the location of the carotid bodies in the Alligator mississippiensis. Biologists are interested in alligators due to their evolutionary success and distinct physiology. Their unique cardiopulmonary system has been researched, yet to date little has been published about the exact location of alligator carotid bodies. In humans, carotid bodies detect changes in blood levels of CO2, O2, and H+ and help maintain blood-gas homeostasis. Carotid body dysfunction can cause congenital central hypoventilation syndrome (or Ondine's Curse) and other forms of sleep apnea. Alligators are useful as a study model for understanding the evolution of blood-gas regulation in terrestrial vertebrates since they have changed little in the last eight million years. Further research on their vasculature and carotid bodies may help researchers understand how to treat certain human carotid body related diseases. Prior studies have determined that the carotid bodies in mammals are typically located at the bifurcation of the internal and external carotid arteries found laterally in the neck. The authors hypothesized that alligator carotid bodies would also be located at the bifurcation of the internal and external carotid arteries, although in alligators, this bifurcation is located on the posterior surface of the skull. Methods used in this study included vascular dissection of seven juvenile, female alligators, vascular casting, and Kluver-Barrera histological tissue staining for identifying myelin. The researchers' results showed that myelin was located at the bifurcations of the external and internal carotid arteries, indicating the likely presence of nerve fibers from the glossopharyngeal nerve and carotid body. Interestingly, as suggested by prior CT scans of alligator vasculature, the researchers also confirmed via direct dissection that the branching patterns of the left and the right carotid arteries were asymmetrical in the alligators studied.

Camden, Peyton

Institution: ***IN - Valparaiso University***

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Peyton Camden

Abstract Name: **Relationship Between GOES-Derived Lightning and Cloud Properties**

As satellite technology has advanced, the amount and types of information it provides has rapidly expanded as well. One of the current orbiting satellites, GOES-16, uses standard observations from the Advanced Baseline Imager (ABI) to derive cloud-related products and provide them to a diverse user community, including cloud optical and microphysical properties. Another GOES-16 instrument, the Geostationary Lightning Mapper (GLM), detects lightning flash events and creates lightning-related products, which include flash extent density.Since both GLM and ABI level 2 products are used operationally, optimizing their usage is incredibly important. This study analyzes ABI products related to daytime cloud microphysics and finds that the observed cloud microphysics and lightning properties behave in a way that is consistent with expectations. Using case study data collected during the May 12, 2022 derecho event in South Dakota and Minnesota, the connection between ice-type clouds and lightning is established to be most prevalent of all cloud types. Colder clouds generally lead to higher average flash extent density and a higher probability of lightning occurring within the cloud.

Cameron, Sidrick

Institution: *GA - Morehouse College*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Sidrick Cameron *Kyung Min* *Ulrich Hengst*

Abstract Name: **The Subcellular Activation of CREB3L2: A member of the OASIS bZIP transcription factor family in HEK-293 Cells Using Oxidative Stress**

4- hydroxynonenal (HNE) induces oxidative stress in mammalian cells by forming protein adducts due to the inability to detoxify reactive oxygen species. As a result, there is a mechanistic change in the structure and the physiological functionality of proteins. Oxidative stress has been linked to the normal aging of the brain and numerous neurodegenerative diseases, due to the degradation of neurons leading to neuronal death. Stressed cells activate the unfolded protein response (UPR), which is an evolutionary adaptation mammalian species have developed to regulate the number of proteins that exhibit an altered conformation. This study investigates the role and activation CREB3L2 (a transcription factor involved in the UPR) has on cells that exhibit HNE stress: In previous studies, this transcription factor has been linked to the activation of chondrogenesis and the protection against cells that shows endoplasmic reticulum stress. We hypothesize that cell lines that are induced with oxidative stress and protein aggregation will have increased activation of CREB3L2, while those that do not exhibit this stressor will have little to no activation of the transcription factor. HEK-293 cells were treated with HNE to induce oxidative stress and activation of a GFP-linked CREB3L2 was measured by immunofluorescent microscopy. Immunofluorescent microscopy is used to identify GFP-positive cells; cells that express stress along with the activation of CREB3L2, and its intensity. Using a combination of immunofluorescent microscopy and ImageJ; we were able to determine and quantify cells that showed relative cell death in the control and the HNE treatment as well as those that exhibits aggregation. By this analysis, we were able to detect and analyze the activation of CREB3L2 in these cells. Our results show that there is a correlation between the activation of CREB3L2 in stressed or less viable cells in comparison to those that are not.

Campbell, Connor

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Connor Campbell *Celia McKee* *Erik Musiek*

Abstract Name: **The Effect of BMAL1 Expression on Autophagy Activity in Astrocytes**

Circadian rhythm disruption is an established symptom for neurodegenerative disease, however, there is evidence that circadian systems drive pathogenesis. The clock gene, BMAL1, regulates daily oscillations in transcriptional-translational feedback loops critical to homeostasis. In contrast, BMAL1 deletion will render tissues arrhythmic and influence non-circadian genes, thereby inducing reactive astrogliosis. There are in-vitro outcomes where BMAL1 knockout astrocytes exhibit increased lysosomal activity, which implicates circadian clocks in many cellular pathways, such as autophagy. This process maintains homeostasis through delivering misfolded proteins to the lysosome for degradation, and deficiencies in the autophagy clearance often characterize neurodegenerative diseases. Therefore, this project involves determining whether autophagy activity in astrocytes is regulated by BMAL1 expression and displays rhythmic patterns. Through employing the fluorescent (RFP)-EGFP-LC3 reporter, we can detect differential organelle pH values to reveal the autophagy dynamics. Specifically, the RFP:EGFP signal ratio represents the progression from the autophagosome to the acidic autolysosome, thereby quantitatively illustrating the protein degradation arising from autophagy machinery. When comparing astrocyte-specific BMAL1 knockout mice to the wildtype littermates, there are significant increases for EGFP and RFP channels within the white matter. Furthermore, the greater RFP:EGFP value exhibits upregulated protein degradation, which validates that BMAL1 deletion can modulate autophagy activity. Upon establishing the baseline fluorescence for wildtypes across the 24-hour cycle, the EGFP and RFP signals suggested rhythmic activity for the light-stimulated groups. Nevertheless, the insignificant sinusoidal patterns among the dark-only counterparts reduces the probability that circadian clocks regulate autophagy activity. The effect of BMAL1 deletion on autophagy within the white matter likely originates from cells that are uniquely susceptible to dysfunction in non-rhythmic pathways related to astrocytic BMAL1 expression. Ultimately, investigating how BMAL1 protects against neurodegeneration will reveal therapeutic approaches for manipulating the autophagy machinery to promote pathology clearance, along with emphasizing the importance for maintaining sleeping patterns.

Campbell, Cory

Institution: *UT - Utah Valley University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jared Barbre,
Jerry Barlow,
Cory Campbell,
Afsaneh Minaie

Abstract Name: Drone Aided Pathfinding Car

Automation has been the cornerstone of industrialization, and in no industry has it been more important than in automobiles. Each year self-driving vehicles have the potential to save hundreds of thousands of lives and billions of man hours from accidental collisions and traffic congestion. This work takes a different approach to self-driving vehicles by using the aid of an autonomous drone. In particular it focuses on a self-driving RC car solving two dimensional mazes with the drone flying above for pathfinding imagery. Computer vision, and Convolutional Neural Networks are used to detect features and classify them for maze reconstruction in data structure. While multiple algorithms were studied, Dijkstra's shortest path algorithm is used for solving the mazes. The RC car uses an NVIDIA Jetson TX2 NX Xavier for increased parallel processing performance that is required for tracking and classifying the RC car and maze feature in real time as the maze is traversed. The RC car uses mecanum wheels to allow the car to rotate in place as well as move in any direction. Cameras and accelerometer sensors are used for positioning and control systems. This work demonstrates the feasibility of drone aided vehicles in solving mazes. First in simulation that was done in code the algorithm was able to solve mazes of various sizes and complexities. Furthermore, through the use of the current tools available and knowledge on the subject, the RC car was able to solve a physical maze autonomously with a camera positioned above. The final iteration of the solution used a drone to capture the image that was fed to the car to solve the maze. This final solution can easily be adapted to be relevant to vehicle parking and driving automation.

Campbell, Jia

Institution: *OH - Capital University*

Discipline: Biology

Author/Contributors:
Jia Campbell,
Nathan Gibbs,
Christina Mickelson,
Katherine Freeland

Abstract Name: Assessment of At-Home Genetic Testing Kit Consistency Between Identical Twins

Since their arrival on the market in the early 2000s, direct to consumer (DTC) genetic testing kits (at-home kits) have exploded in popularity. As the industry has continued to grow, questions have emerged over the accuracy and consistency of the results of these ancestry reports. Despite claims by all companies studied here of over 99% accuracy, previous research in this lab has shown significant inconsistencies between the results provided by each company. Of 42 individuals previously tested, 39 had large discrepancies in their genetic ancestry categories from company to company; results varied by up to 40% for some participants. The goal of the current study was to examine the DNA of identical twins to determine if these testing discrepancies exist within companies (since the DNA of identical twins should be the same) or only between them. The same three genetic testing companies that were previously studied were used here - Ancestry, 23&Me, and MyHeritage. To date, five sets of identical twins have received full results, and several additional sets of twins are in process. Results have remained consistent with the previous study, with discrepancies between ancestry categories reported by each company. Surprisingly, in addition to the discrepancies between companies, differences were found between twins in data reported by the same company. No set of twins had results that completely matched. In some twins, one individual was noted to have an ancestry category that the other didn't have at all. Given the claims of near-perfect accuracy reported by the companies, and the fact that some of them also market genetic health screenings for certain diseases and health conditions, these inconsistencies raise serious ethical concerns about the way on which they market and report data to under-informed consumers.

Campbell, Katherine

Institution: *MN - St. Catherine University*

Discipline: **FAN Abstract**

Author/Contributors:
Katherine Campbell *Rahul Roy* *Maarten Rotman*

Abstract Name: **Introducing the Community of Neighboring and National Entrepreneurial Centers and Trainees (CONNECT) Network**

Entrepreneurial training is missing in current undergraduate biology education. While undergraduate biology students may be aware of entrepreneurship as a career option and may have opportunities to explore this path in graduate school, students often fail to see themselves as innovators and find the process daunting. With the National Science Foundation's (NSF) thrust into entrepreneurial spaces and the new directorate of Technology Innovation and Partnerships' focus on use-based innovation, there is an urgency to train students as both researchers and innovators to solve the nation's scientific and societal challenges. Through NSF funding, the CONNECT network will be a community of educators, students, entrepreneurs and other stakeholders, with a special emphasis on building membership from historically Black colleges and universities (HBCUs) and other Minority Serving Institutions (MSIs). There is particular urgency for more representation in STEM entrepreneurial ventures given that women make up only 28% of the STEM workforce, with women of color comprising just 5% of the total. By building this network with an emphasis on BIPOC women at the undergraduate, faculty, and entrepreneur stages, the CONNECT network is poised to transform the undergraduate biology experience for historically marginalized students across member institutions. Through this short talk session, CONNECT network directors will discuss their ongoing efforts and ways to get involved in giving voice to the faculty and student needs that underlie the current curricular gap in undergraduate biosciences entrepreneurship education. Beyond the curricular needs assessment, we will also assess the availability of undergraduate Science of Translational Science research opportunities and provide a framework for students to conduct undergraduate research that translates into future entrepreneurial ventures. The outcome of this network's work will be a data-rich snapshot of participants' needs and a directive for an inclusive entrepreneurial ecosystem that builds off of the strength of undergraduate research across the nation.

Campbell, Mikaela

Institution: *MN - St. Catherine University*

Discipline: **Economics**

Author/Contributors:
Mikaela Campbell,
Hailey Sexton

Abstract Name: **Welcoming the Dear Neighbor?**

From 2000-2018, white homeownership in Minnesota remained constant at 70%, while black homeownership saw a decline from 31% to 21% (Turtinene, 2021). Even before this decline, disparities between white and black homeownership were stark on account of discriminatory practices including racially restrictive covenants, clauses in housing deeds blocking BIPOC citizens from purchasing property. Using data from the Mapping Prejudice project that catalogs covenants in Hennepin and Ramsey county and historical data from the US census, we investigate the relationship between upward mobility and neighborhood shares of racial covenants by running regression analysis to check for correlation. Preliminary results show that neighborhoods with high concentrations of covenants have higher upward mobility for white children but not for black children. Covenants are associated with a widening opportunity gap long after they became legally unenforceable. This research informs policies that remedy longstanding disparities such as changing zoning restrictions or amending first-time homebuyer grants. Reference: https://bringmethenews.com/minnesota-lifestyle/twin-cities-has-worst-racial-homeownership gap-in-the-us-report-finds Melissa Turtinen

Campen, Hannah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Hannah Campen,
Ana Minski

Abstract Name: **Experiences of water insecurity and its relation to food insecurity, health, and well-being**

Water insecurity, characterized by uncertain access to, and availability of, clean water and poor water quality is an emerging concept in the field of nutrition. While most studies on water insecurity have been conducted in low- and middle-income country settings, water insecurity in the U.S. is documented, particularly among low-income and black, indigenous, and people of color (BIPOC) communities in both urban and rural settings. Provided the interconnections between food and water, scholars increasingly recognize the need for research strategies to better understand the role that water insecurity plays in human nutrition and well-being. Survey data were collected from residents of central Wisconsin. Chi-square tests of independence and logistic regressions were used to examine associations among key variables. Experiences of water insecurity and food insecurity were co-occurring among low-income participants but more frequently they were experienced independently. Experiences of water insecurity were associated with psychosocial stressors detrimental to mental well-being that may also impact nutrition. Most participants reported treating their water associated with a lack of trust with the quality of their drinking water. These findings have important implications for developing responsive interventions to support access to adequate food and water. Future studies to test the relationships between the characteristics of water insecurity identified in this study with food insecurity among low-income populations are warranted.

Campion, Ben

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Ben Campion,
Nolan Baxendell

Abstract Name: **Evidential Markers in Tibetan**

This study examines the function and variation of evidential morphemes in Tibetan. The language has multiple different morphemes in order to show how the speaker knows the information they are sharing as well as how confident they are in the statement. These morphemes appear as the last in a series of suffixes on the verb. Previous descriptions categorize them into direct, indirect, ego, and neutral (Kalsang et al, 2013). After conducting elicitation sessions with Tibetan language consultants in which we asked translation questions to learn more about this feature we propose a new system to categorize these morphemes: 1) Past Direct Evidentials; 2) Present Direct Evidentials; 3) Indirect Evidentials. We found that the morphemes previously categorized under the ego label seem to work more like first-person-specific morphemes in the other categories, so our model has distributed that group. Understanding these morphemes better can provide more insight into meaning making in the language and how Tibetan speakers express themselves.

Campos, Gloriana

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Biology

Author/Contributors:
Gloriana Campos,
Mekala Gunasekaran,
Natalya Wells

Abstract Name: **ACSS2 knockout effects on muscle phenotype, and fatty acid and glucose metabolism**

Acetyl-CoA synthetase 2 (ACSS2) is a key enzyme that converts acetate to acetyl-CoA, which is a major metabolite in carbohydrate and fat metabolism. This project focuses on the knockout effects in the muscle of mice, and measuring changes in fatty acid and glucose metabolism, as well as muscle phenotype. The phenotype of the following five muscles were dissected and snap frozen from wildtype and ACSS2-/- mice: quadricep, gastrocnemius, tibialis anterior (TA), extensor digitorum longus (EDL), and soleus using cryostat tissue sectioning and stained with H&E. The RNA was extracted and was used for qPCR to detect the gene expression of Glut4 and Fatp1 receptors. There was a significant decrease in soleus and gastrocnemius cross-sectional area (CSA), significant increase in quad CSA, and no significant change in TA and EDL. There was non-significant differential expression of Glut4 and Fatp1in quad, soleus, and TA. Since ACSS2 is a metabolic enzyme, future experiments may incorporate the effects of exercise and dietary change on muscles. The results from this study will provide more information on the effects of ACSS2 on skeletal muscle and myopathy.

Campos Luis, Paola

Institution: *TN - Christian Brothers University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Laura Billings,
Paola Campos Luis,
Amy Guerrero,
Edgar Villarreal,
Erlin Rodriguez

Abstract Name: **Neural and Behavioral Correlates of Sensation Seeking**

We sought to clarify both behavioral and neural characteristics of sensation seeking. In particular, we were interested in two components of event-related brain potentials (ERPs) elicited during a response inhibition task: the P3a, which is elicited by novel, unexpected, stimuli, and the P3b, which is elicited by targets. Participants completed self-report questionnaires to measure their sensation seeking. During the task, participants were presented with three types of visual stimuli in randomized order at a rate of approximately one every 1.25 s. The stimuli were (1) non-targets, to which they should make a response, (2) targets, to which they should withhold a response, and (3) novel stimuli, to which they should withhold a response. The targets and non-targets were relativelybenign,but required sustained attention to tell them apart. The novel stimuli were photographs depicting arousing situations (e.g., skydiving). Based on previous research, we predicted that (1) the P3awouldbe positively correlated with sensation seeking, (2) the P3b wouldbe negatively correlated with sensation seeking, and (3) response accuracy to novel stimuli would be inversely correlated with sensation seeking. P3a and total sensation seeking were positively correlated, but the relationship was small and not statistically significant. In contrast to our prediction, P3b was moderately positively correlated with total sensation seeking. Finally, response accuracy was not correlated with total sensation seeking. Although none of our hypotheses were supported for total sensation seeking scores, we did find relationships between the ERP components and total sensation seeking, boredom susceptibility, and disinhibition.

Canavino, Cristen

Institution: *GA - Kennesaw State University*

Discipline: Education

Author/Contributors:
Chinasa Elue *Cristen Canavino* *Christopher Gardner,*
Sarah Hampton *DeCarlos Mckinney* *Zoe Brown*

Abstract Name: **Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the Experiences of First-Year College Students**

Student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years. The offset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before. Of growing concern is the rising mental health crisis that is sweeping through higher education which warrants an immediate and intentional response. Further, students are currently facing dire financial constraints, food and housing insecurities, and many other challenges that complicate their college experiences. As freshman students are now experiencing college for the first time, their experiences may vary drastically from their predecessors. Specifically, current first-year students' college transitions are muddied from their various high school experiences that may have been a remote, hybrid, or in-person with some variation of security measures. Further, the grief, loss, and trauma first-year college students have experienced during the pandemic warrant special attention as we are contending with the types of resources and support, they need to matriculate and complete their degrees. The remnants of grief and trauma from the pandemic still linger and are impacting the college experiences of first-year students and their abilities to navigate their academic and professional goals. Hence, through a qualitative research design, our research explores the lived experiences of first-year college students. Specifically, the research question explored in our study is: How or to what extent has grief and trauma from COVID impacted the educational journeys of first-year students? The aim of this research is to provide an important opportunity to investigate how to better support college students as they move through collegiate experiences.

Cano, John

Institution: *WI - University of Wisconsin-Superior*

Discipline: Music

Author/Contributors:
John Cano

Abstract Name: **Unifying Vibrations**

Rooted in tradition are these unifying Vibrations. Convention needs change in order to grow. Rooted in interest and passion are these preformal transitions. What is now is before but more; peering onward and not below. Our research was based on the diffusion of the 332 Rhythm. This is a musical rhythm of Long long short strikes. Each long is one and a half beats, or - - - . and the short is one beat - -. These are represented in half beats and look like this: - - -, - - -, - - or Long, Long, Short. We heard of this rhythm as "The World's Most Universal Rhythm." We wanted to see if there was much validity in that title but we also wanted to make something out of our research. What we made was a show; A show in which we present and perform the music we found that not only has the 332 but uses it in particular ways that we found interesting enough to share with people. We wanted to make something educational and entertaining; we wanted them to walk away feeling like they enjoyed the hour they gave us and have something new to consider in their every day. The performance expresses my relationship the music, culture, and history of each place as well as the research we did when collecting these samples of music. The music that is share: The McIntosh Shouters: Blow Gabriel; Gahu music by Africana Dance Ensemble; Taiko: Eitetsu Hayashi // Fertility of the Sea; Michalls Terlikkas: Psintri Vasilidja Mou; Płyta Tatarska: Bahczalards; Palestinian Dabkeh: Turab Beladi; Clogging: Wild Goose Chase Cloggers; RUSH: Hersey.

Cantrell, Kathryn

Institution: ***IL - Loyola University of Chicago***

Discipline: **Mathematics**

Author/Contributors:
Kathryn Cantrell

Abstract Name: **Evolutionary Game Theory**

While Game Theory often will reward non-cooperative and antisocial strategies, the real world exhibits the need for cooperation. In this poster, I examined ways that cooperation can be encouraged by analyzing various setups including distributions of players across a given field. Players are randomly selected to play nearby players and perform a coded version of an altered version of the Prisoner's Dilemma. Players may either form offspring or be removed from play, determined by their scores. As more rounds are played, we note the proportion of cooperative versus non-cooperative strategies and how they may change over the course of the simulation.

Cantu, Javier

Institution: ***KY - Centre College***

Discipline: **Education**

Author/Contributors:
Pryanna Alper *Javier Cantu*

Abstract Name: **Education Students' Understanding of Scale and Geometric Space of the Earth, Moon, Sun System and Cause of Moon Phases**

This sequential explanatory mixed methods study examined how well pre-service teachers and education students understand the Earth/Moon/Sun scale, motion, and orbital geometry necessary to observe various lunar phases from an Earth-based perspective. Research has shown that students have great difficulty understanding the cause of lunar phases with many incorrectly explaining the phases are caused by the Earth's shadow, the Sun's shadow, or an object blocking the Sun's light (Wilhelm et al. 2018; Plummer et al. 2010). The research question investigated was: What understandings do students have about the Moon and its phases, and how do their lunar conceptions relate to their spatial ability? This question was explored with undergraduate education students from two institutions in the south-central United States. Quantitative data consisted of 72 participants completing a modified Lunar Phases Concept Inventory (LPCI; Lindel, 2002) with 25 multiple-choice questions. To better understand students' lunar-related spatial-scientific thinking, we followed the quantitative data collection with select student interviews (high, low LPCI scorers) using a semi-structured protocol concerning Earth/Moon/Sun geometry, lunar motion, and why the Moon appears different at different times. The LPCI findings showed that approximately 59.3% of students held the Earth-shadow misconception, 9.4% had an object-blocking explanation, 3.1% had the Sun-shadow explanation, while 28.2% had the scientific explanation when describing the cause of phases. We also found that 18.8% of students did not correctly understand the scale of the Earth/Moon/Sun system (e.g., distance between Earth and Moon) with many believing the Moon to be much closer to Earth than it is, which could be a possible reason students tend to hold shadow and blocking notions. Similar to the LPCI, interview results showed general misunderstandings of why lunar phases occur, with some participants not able to correctly sketch various phases, nor accurately explain the Earth/Moon/Sun geometry for particular phases.

Caputa, Dominic

Institution: *MO - Truman State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Zoe Vetter,
Dominic Caputa

Abstract Name: **Computational Discovery of an Inhibitor to APOBEC3B as Treatment for Cancers**

APOBEC3B is a naturally occurring protein in humans which has the purpose of fighting off certain ailments, such as HIV, by changing certain nucleic acids in our DNA. For immunity purposes, it is typically beneficial to have such a protein in our bodies. However, fitting with the textbook definition of cancer, the problem occurs when there is an overexpression of APOBEC3B in our bodies. At that point, APOBEC3B begins to convert too many nucleic acids, and this helps create more mutations in our cells which in turn creates tumorous bodies as the cells begin to replicate rapidly. The goal of this research would be to help find an inhibitor for the APOBEC3B protein from a database of unresearched ligands to keep the protein from binding to our DNA and creating hazardous cell growth. The primary source of these potential inhibitors isthe ZINC12 database from which we have already sorted through six million different candidates to find the top 200.From the six million candidates, the top 30 have been selected based on how easily they might bind to APOBEC3B. Now, similarities havebeen found between those top candidates and then improved upon using chemical intuition and drug design techniques to create the best drug possible. However, we have also used a novel technique,de novo ligand design, which uses software to assemble entirely new candidates based on those same top 30 candidates. We have now simulatedthose de novocandidates in the same manner as the previous candidates, and this analysis has produced a promising inhibitorof APOBEC3B, and keptthe drugbound to the protein in increasingly more realistic situations.

Cardenas, Maddy

Institution: *SC - The Citadel*

Discipline: **Physics/Astronomy**

Author/Contributors:
Ty Duben,
Maddy Cardenas,
Kaelyn Leake

Abstract Name: **Vibrational and Coupled Frequency Response of Tensegrity Tables**

Tensegrity structures have many constructional applications to improve the stability of a design. The structure, design, and function of tensegrity systems can be better understood by researching factors that determine their stability. Stability of tensegrity structures was researched by testing vibratory resistance on a shake table and dampening factors by displacing the top of the system and calculating natural frequencies and dampening rate when exposed to various external forces. When experimenting on a shake table with a rectangular structure, it was concluded that the difference in magnitude of acceleration between the bottom and top of the structure decreased by 0.68 as the bottom was exposed to a frequency of 7.2. Compared to a difference of 4.12 at a frequency of 14.9. Showing an increasing difference in acceleration as vibration frequency increases. Tensegrity structures were also found to have multiple nonsymmetric natural frequencies. Due to the two axes of symmetry, the rectangular tensegrity structure was found to have two natural frequencies. These frequencies were found to be within 1.68 Hertz of each other and are affected by the amount of displacement. From these experiments, it can be concluded that tensegrity structures provide stability because they naturally dampen vibration between the bottom and top of the structure. By understanding the stability of tensegrity systems, their applications to architecture and construction development can be better explored and utilized.

Carey, Taylor

Institution: *MT - Montana State University - Bozeman*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Taylor Carey,
Brent Peyton

Abstract Name: **Engineering Biodegradable Plastics Through Thermophilic Value Added Polyhydroxyalkanoates**

Thermus thermophilus strain HB8, a known PHA producer, will be tested for growth on partially oxidized plastic wastes produced through preliminary cracking and oxidation of LDPE plastic wastes. This research focuses on maximizing thermophilic microbial growth on oxidized plastic wastes and aims to explore potential thermophilic production of value-added bioplastics. The research will initially determine if Thermus thermophilus HB8 can use oxidized petroleum-based plastics as its main carbon source since it has been shown in our lab to produce PHA. It is estimated that oxidized plastics contribute up to 80% of marine debris causing serious environmental and health problems worldwide and the use of oxidized plastic wastes may offer an alternative for PHA bioproduction. The goal of this project is to identify one or more thermophiles capable of degrading oxidized plastic waste and potentially produce value-added polyhydroxyalkanoate (PHA) bioplastics. Other results showed T. thermophilus HB8 tested under nitrogen-limited conditions could produce PHAs using glucose as its sole carbon and energy source. This test was found to successfully grow and produce PHA, indicating that this thermophile could be a promising isolate for downstream testing on chemically/catalytically deconstructed plastic materials. Growth rates will be assessed using optical density measurements at 600 nm. Preliminary experiments will use sodium gluconate at 1.5% (w/v) or glucose at 2.0% (w/v) as a sole carbon and energy source for growth because they are known to enhance PHA production in T. thermophilus. Following this initial test, partially degraded plastic wastes will be incorporated as sole carbon source for growth, with downstream extraction and analysis examining PHA production levels.

Carlson, Emma

Institution: *MT - Montana State University - Bozeman*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Emma Carlson

Abstract Name: **Reading as a Revolutionary Act: The Resistance of and in Reading Lolita in Tehran**

What comes to mind with the phrase, ‘the right to choose?’ Given current American political rhetoric over abortion rights, a woman’s right to choose an abortion might be the conclusion one comes to in the United States. Azar Nafisi had something else in mind when she wrote ‘the right to choose’ in her book Reading Lolita in Tehran: A Memoir in Books. The complete sentence reads, “The elusive goal at the heart of democracy: the right to choose.”[1] Even this sentence does not enlighten the reader to the full context of words, that in the United States evoke the topic of abortion rights. Under the authoritarian regime of the Islamic Republic of Iran, Nafisi believed in the power of literature and the right to choose what to read. In her memoir, Nafisi constructs an analogy between reading literature that challenges the fabric of an authoritarian regime and the requirement for women to wear the veil in public. In this paper I will utilize Nafisi’s teaching of ‘immoral’ books in Iran, authors that the Islamic Republic dictates are corrupt, immoral, and materialistic. Nafisi’s actions are counter-revolutionary to the Islamic Revolution of Iran and can be used as a case study for how women every day in Iran face the choice whether to challenge the mandatory hijab laws. I will examine current protests in the country, with an emphasize on the deadly force used on women by Iran’s morality police who enforce laws that require women to wear the hijab. Through a critical analysis of Reading Lolita in Tehran, I will parallel Nafisi’s teaching of books that the Islamic Republic deemed immoral to the mandatory hijab laws.
[1] Azar Nafisi. Reading Lolita in Tehran. New York: Random House Trade Paperbacks, 2008. 307

Carlson, Kitrina

Institution: *WI - Madison Area Technical College*

Discipline: FAN Abstract

Author/Contributors:
Elizabeth Behr,
Kitrina Carlson,
Kristine Horabik,
Elise Van Ginkel

Abstract Name: **Community College "CUREs" Engagement Deficits in Biology**

Madison Area Technical College (Madison College) is a public technical and community college serving Madison, WI, and the twelve surrounding counties. Total enrollments exceeded 24,000 students in the 2021-22 academic year, with 42.2% of entering full-time students in Fall of 2020 continuing the following Fall. The Liberal Arts transfer program offers seven tailored pre-majors designed for transfer and satisfaction of the first two years of general studies at some institutions, with the University of Wisconsin-Madison serving as our largest transfer partner. A federally funded initiative to improve transfer student success through the establishment of Course-Embedded Undergraduate Research Experiences (CUREs) was established in majors' biology courses beginning in Fall 2018. This project has resulted in over 500 students participating in skills-focused CUREs in biology courses, and is expanding beyond the target courses to include related courses and programs. Prior to our CUREs implementation, only 18% of students completed abiology majors course series within two semesters. After CUREs implementation, 32% of students complete abiology majors course series within two semesters.Our panel will discuss this, and other outcomes of implementing CUREs in our biology courses, as well as the challenges and opportunities associated with implementing CUREs at a community college. Details about two of our collaborative CUREs initiatives, including ourwork implementing Tiny Earth and Sea Phages across three different biology courses will be highlighted.

Carlsten, Victoria

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Victoria Carlsten,
Grace Wainwright,
Ellie Williamson,
Sayaka Mochizuki,
Chelsea Ortiz-Jimenez,
Jennifer Smith

Abstract Name: **What?s all that noise about?: Alarm-calling in California ground squirrels**

Many socially-living diurnal animals have evolved vocalizations known as alarm calls as a mechanism for reducing predation. California ground squirrels are a major prey species for coyotes, rattlesnakes, and birds of prey, but must also cope with human foot traffic and anthropogenic noise. This project characterizes the acoustic structure, duration, ecological context, and timing of these calls produced by ground squirrels. Combining naturalistic and automated acoustic monitoring, we describe the extent to which humans and dogs versus natural predators trigger naturally-occuring alarm calls in California ground squirrels across the 24-hour cycle. First, from naturalistic observations as part of my Long-term Behavioral Ecology Project on California ground squirrels at Briones Regional Park, we document that calls are associated with natural predators but not humans visitors. We also describe the contexts in which squirrels produce either a short, non-repetitive vocalization or a longer repetitive bout of alarm calls. Second, we present data from acoustic monitoring devices and camera traps that confirm ground squirrels mainly call during daylight hours, a time of day before coyotes emerge at the site. Our data confirm the alarm-calling “schedule” for these animals and offer new insights into not only what triggers them to call but also the temporal patterning of fear responses over time.

Carney, Adelyn

Institution: *IN - Valparaiso University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Adelyn Carney

Abstract Name: **Absolute Music and its Revelation of Transcendence in Eliot's Four Quartets**

T.S. Eliot scholars have long concerned themselves with the exact function of the music references in Four Quartets and the extent to which it influences Eliot's poetry. Some scholars like Helen Gardner and Aakanksha Virkar-Yates believe that music plays an integral role in the form and meaning of the poetry; in other words, the poetry is best understood when read through a musicological lens. Others, like Thomas Rees, think that the music analogy is grossly over-applied to Four Quartets and that scholars should adopt a more holistic approach to understanding Eliot's work. In this paper, I will argue that Gardner and Virkar-Yates are largely correct. I suggest that Eliot's poetic form in Four Quartets most closely resembles Wagner's idea of absolute music--a sort of all-pervading melody that transcends the bounds of human experience. Through his use of leitmotifs and musical analogies, Eliot connects music to themes of love, self-denial, and the divine in a way that enables readers to understand that only when one denies themselves and comes to understand the human purpose to love, can one understand transcendence in a way that deeply connects them to the divine realm of God.

Carothers, Micaela

Institution: *OK - University of Central Oklahoma*

Discipline: Nursing/Health Science

Author/Contributors:
Micaela Carothers

Abstract Name: **The Prevalence of Elder Abuse Enacted by Caregivers**

Background: Elder abuse is defined as any act of abuse directed towards an elder individual by their caregiver and can include physical abuse, emotional abuse, financial abuse, social isolation, and neglect. This abuse can occur in any type of facility from any form of caregiver personnel. Most of the abuse occurs within long-term care facilities, such as nursing homes. A current review of literature shows that elder abuse has a high prevalence, yet there is a low reporting rate and low use of interventions among facilities. Of the hospitals that perform abuse screenings, studies show that many of these hospitals screen only after inpatient admission, indicating that elders seen in the emergency room or in outpatient centers are not screened. Additionally, signs and symptoms of abuse can be masked by commonly assumed signs of aging, adding to the under reporting of abuse. Purpose: This proposal will provide new information concerning the presence of elder abuse and will potentially solidify the effectiveness of education. Current practice needs to change because elder abuse is still occurring. Method: For this proposal, establishing the current knowledge of elder abuse from the caregivers will be obtained by a pre-education assessment. Caregiver education regarding risk factors, signs and symptoms, and reporting of elder abuse will be presented. This will include assessment tools to help identify abuse and interventions to decrease abusive acts. Post-education surveys will be utilized to evaluate the efficacy of the education. Conclusion: The expected results are that caregivers will have an increased understanding of elder abuse and increased awareness of recognizing and preventing it, ultimately decreasing the risk of elder abuse.Key words: Caregiver, Elder, Abuse, Education

Carpenter, Carmen

Institution: *MI - Wayne State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Carmen Carpenter *Leah Gowatch* *Clara G. Zundel,*
Samantha Ely *Julia Evanski* *Amanpreet Bhogal*
Shreya Desai *Hilary A. Marusak*

Abstract Name: **The Impact of Sleep Duration on Anxiety Symptoms, Fear Extinction, and Brain Activation in Youth**

Background: Deficits in fear extinction learning and its later recall are linked are risk of anxiety disorders. Poor sleep and anxiety are related,and emerging studies in adults suggest that partial or total sleep deprivation is associated with poorer extinction recall and altered activation of brain regions associated with the expression and regulation of fear.However, these associations have not yet been examined duringlate childhood and adolescence, a time when sleep duration tends to decrease and risk of anxiety disorders increases. Methods: Seventy-six youth (38 female, ages 6-17) completed a two-day fear extinction and recall paradigm during functional magnetic resonance imaging scanning. Extinction recall was measured using unconditioned stimulus expectancy ratings and skin conductance responses. Youth reported on their anxiety symptoms as well as typical sleep duration on school days, free days, and between the study visits. Regressions examined associations among sleep, anxiety, extinction recall, and neural responses.Results: Average sleep duration on school days (but not free days) significantly predicted anxiety symptoms when controlling for age and sex (b=-3.837, p=.031). Sleep duration was not associated with extinction recall; however, longer sleep between the two study visits was associated with lower neural activation in the cerebellum, occipital lobe, supplemental motor area, and dorsomedial prefrontal cortex during extinction recall. Discussion: Poor sleep between study visits was associated with greater engagement of brain regions associated with the expression of fear in youth. These results have implications for future research on neural mechanisms underlying the link between poor sleep and anxiety in youth.

Carpenter, Kennedy

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Public Health

Author/Contributors:
Madison Lanai,
David Buckner,
Kennedy Carpenter

Abstract Name: **Designing A Metastatic Breast Cancer Support Program**

Currently, there is a significant lack of community-based support groups for individuals living with Metastatic Breast Cancer (MBC). The majority of breast cancer support groups exist for those who are breast cancer survivors, inadvertently overlooking those given a terminal diagnosis. Additionally, only about 2% to 5% of the funds raised for breast cancer research is spent towards breast cancer metastasis studies. The goal of our research is to create a patient-led, community-based support program for individuals living with MBC. This will require the collection of resources that address the specific needs of this community, which were identified through extensive literary research and comprehensive surveys. The survey we created assessed their backgrounds, capabilities, needs, and desires. Additionally, we conducted 15 one-on-one interviews with MBC individuals to gather information on their past support program experiences and program structural preferences.With this qualitative and quantitative data, we are currently developing the Charlotte MBC Program and plan on officially implementing the program in the spring of 2023. We have partnered with Carolina Breast Friends, a Charlotte-based nonprofit organization centered around providing support and resources to those who are affected by breast cancer. Carolina Breast Friends does not currently have any specialized services for those with metastatic breast cancer and partnering with this organization allows them to impact more lives within the breast cancer community. We plan on housing our program at their Pink House, a unique respite center for breast cancer survivors.

Carr, Caitlyn

Institution: ***PA - Lafayette College***

Discipline: **Art/Music History**

Author/Contributors:
Caitlyn Carr

Abstract Name: **Polychromy on the Pyxis with Scenes from the Life of Christ**

This paper examines an ivory pyxis from 6th century Syria and analyzes the presence of color on its surfaces. The pyxis is in the shape of a cylindrical box and displays scenes from the life of Christ. It has a diameter of 12 centimeters and a height of 8.5 centimeters, and it is currently housed in the Cluny Museum in Paris, France. In its present condition, the color of the pyxis appears as a warm beige of the natural ivory material. However, scientific analysis has proven that this object has traces of different colors thus positing a question about how it would have originally been painted. Observations through a microscope reveal that the pyxis has traces of red, green, and brown pigments, thus suggesting that it would have been a vibrant work of art. The paper focuses on the present pigmentation of the pyxis and considers both primary, medieval written sources and contemporary scholarship to reconstruct the original appearance of the pyxis. By analyzing historical context and theological narratives, the paper compares the pyxis to similar artworks to assess the symbolism and meaning of particular colors detected on the pyxis. Moreover, the author uses 3D modeling of the pyxis to reconstruct the presence of color and the original aesthetic appeal of this object. Recreating the possible appearance of polychromatic ivories, such as this pyxis, allows us to reframe our understanding of Byzantine art, and by extension, its connection to modern society.

Carr, Christina

Institution: ***NC - Elon University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Christina Carr

Abstract Name: **Stressed-Induced Grooming in Ants**

The experience of stress has been associated with psychological and physical strains in mammals and other vertebrates. Prior research conducted on vertebrates offers evidence that these animals have acquired tools to reduce stress by stress-induced grooming after exposure to a stressor. Stress-induced grooming or displacement grooming is grooming behavior unrelated to maintenance and care. There is limited research on how insects experience stress and the various responses. This study examines displacement grooming in western harvester ants (Pogonomyrmex occidentalis) following exposure to various changes in the environment to generate stress. 50 ants were randomly assigned to one of three groups; vortexed (exposed to 60 sec of vigorous shaking on vortex), sham-vortexed (exposed to 60 sec of an inactivated vortex), or undisturbed (left in containers without handling). Animal behavior was recorded, and the total time spend grooming was later measured by a researcher who was blind to the experimental condition of the animals. We hypothesized that ants that underwent 60 sec. of vigorous shaking (group vortexed) would show more displacement grooming than animals that were exposed to an inactivated cortex (group sham-vortexed) or undisturbed animals. We found that animals in the vortexed condition did groom more overall than animals in either the sham-vortexed or undisturbed groups (p's 0.02). Total grooming did not differ between the sham-vortexed and undisturbed groups (p 0.01). These findings suggest that the levels of intensity in stressors differentially affect grooming responses, with the most intense stressors eliciting more grooming and less intense stressors eliciting less grooming. This suggests a similarity in the grooming activity of invertebrates and vertebrates when exposed to environmental stressors and suggests that invertebrates can distinguish between different intensities of stress.

Carrascal-Saenz, Jose Francisco

Institution: *TN - Trevecca Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jose Francisco Carrascal-Saenz,
Alayna Johnson,
Juana Valentina Rodriguez Trujillo

Abstract Name: **Investigating the Relationship between Academic Stress, Trait Self-Control, and Compulsive Behaviors in College Students**

Stress amongst college students has been at an all-time high, contributing towards issues in coping, poor academic performance, and increased dropout rates. The American Psychological Association has even identified this population as vulnerable to high levels of stress. The current study aimed to explore relationships with academic stress, trait-self control, and various compulsive behaviors including disinhibited eating, cyberloafing, and compulsive online shopping. In total, 164 college students were surveyed utilizing convenience sampling to take part in this research by volunteering their time to fill out a 71-item survey. Survey packets included the Perceptions of Academic Stress Scale (PAS), the Brief Multidimensional Self-Control Scale (BMSCS), the Dutch Eating Behavioral Questionnaire (DEBQ), the Cyberloafing in Lectures Measure (CLM), and the Modified Bergen's Shopping Addiction Scale (M-BSA). In addition, several demographic questions and daily hours spent on Social media were asked. It was hypothesized that there would be negative correlations between academic stress and trait self-control. Furthermore, it was believed that there would be negative correlations between trait self-control and the various compulsive behaviors studied. Lastly, it was hypothesized that there would be positive correlations between academic stress and the compulsive behaviors studied. Results found significant moderate positive correlations between academic stress and cyberloafing and compulsive online shopping. Furthermore, a significant moderate negative correlation was found between academic stress and trait self-control. Trait self-control and the compulsive behaviors studied were unrelated. Correlations between academic stress and disinhibited eating were also not significant. Recommendations for future research, implications, and limitations are discussed.

Carrillo, Chloe

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Music

Author/Contributors:
Chloe Carrillo,
Paterjah Lee,
Jesse Hanson,
Havilah Vang

Abstract Name: **Borodin String Quartet No. 2**

Borodin's Second String Quartet in D Major is a piece that requires advanced ensemble techniques, fine intonation work, and balanced melodies. It is an essential quartet piece within the string repertoire, and one which our group has grown from immensely while preparing.
The passing of melodies from cello to first violin and viola to second violin requires eye contact, breathing, and togetherness as a group. Borodin includes immediate tempo changes marked at the two animatos, as well as poco a poco dim. e rit at the end of the piece.
Beginning in the deceptively easy key of D Major, intonation inaccuracies are not easily hidden in this piece. Several moments require the performers to play in unison or octaves, and every chord must be carefully tuned. Compounding this, the piece changes keys several times during its development. The F#s in these keys are naturally dissonant and difficult to tune, especially in a group setting. Our quartet has spent hours together refining our intonation.
Throughout the piece, the first violin and cello converse with each other by trading the main melody. Later in the development section, the melody is passed around to the rest of the quartet. At the recapitulation, the cello hands the melody to the viola, requiring a strong sense of balance among the group. Because of this, our quartet has been working on balancing the melody and the accompaniment. The passing melodies require each member to use the same bow techniques and distribution, keeping everything uniform and beautifully phrased.
An influential work for any group, Borodin's second string quartet blends beautiful melodies and textures with flawless technique to create a timeless masterpiece.

Carroll, Brendan

Institution: *NY - SUNY Brockport*

Discipline: History

Author/Contributors:
Brendan Carroll

Abstract Name: **The Vote: The Fight For Black Women's Suffrage in the Jim Crow South**

When the Nineteenth Amendment was ratified in 1920, many women were finally able to vote alongside their family, friends, and spouses, but black women in the South faced many barriers that kept them away from the polls. Many historians have done a great amount of research regarding women's suffrage movements, but the experiences and stories about black women suffragists are predominantly excluded. This project explores several points that impacted black women in the South after the Nineteenth Amendment was passed. First, it will discuss how racism flourished within the South and how it caused millions of black women to be disenfranchised by it as well as how they responded to it. Next, my project will discuss some of the responses made by black and white female suffragists in the North and how they responded to the problems of minority women in the South. Finally, this paper will cover the attempts black women made in the South so that they could gain access to the polls. My research uncovers how some southern black women were able to register to vote after the Nineteenth Amendment was passed, specifically about a women named Mrs. Fred Wheelock who was able to vote in the South alongside three other black women. I argue in this paper that black women were very invested in gaining voting rights as well as equality for all and even though the South, for most of the twentieth century, disenfranchised many black women there were certain cases in which they were able to register to vote. For many women after 1920, the fight to obtain voting rights and equality was over, but for black women, the fight was only beginning.

Carroll, Zed

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lea Mobers,
Zed Carroll

Abstract Name: **Factors that Affect Perceptions of Gig-Workers**

According to Pew Research Center, 16% Americans have earned money on online gig platforms such as Uber or TaskRabbit at some point. However, research on how consumers select gig workers is still mostly underexplored. The purpose of this study is to investigate the potential impact of a gig worker's gender and self-presentation in their profile picture on consumer perceptions and choices. Specifically, we propose that smiling and quality of profile picture in terms of professionalism positively influence consumers' perceptions on the gig worker's competence, trustworthiness, and the likelihood of hiring them for a task. We also propose that these two factors will interact with gender, such that the positive effect of smiling is greater for female than for male workers, and the positive effect of professionalism is greater for male than for female workers. Lastly, we hypothesize that gender bias exists on gig platforms, such that male and female gig workers are more likely to be selected for tasks that are stereotypically aligned with their traditional gender roles. We conducted a 2 (gender: male vs. female) x 2 (smile: smiling vs. neutral) x 2 (professionalism: professional headshot vs. selfie) between-subjects experiment on Qualtrics to test our hypotheses. Eight fake worker profiles were created with different profile pictures to reflect the experimental manipulation. Undergraduate psychology students took an online survey where they were randomized to view one of the eight worker profiles. Additionally, we created one more worker profile that showed a smiling male in a professional headshot, which served as a comparison in each condition. We are currently in the process of data collection, which will be completed by December 2022. Data analyses will be completed by March 2023. Our findings will provide practical implications to gig workers regarding how to enhance their chance of being selected.

Carson, Daniel

Institution: *IA - University of Iowa*

Discipline: Psychology/Neuroscience

Author/Contributors:
Daniel Carson *Sean Farley* *Ryan LaLumiere*

Abstract Name: **Multi-Site Electrophysiological Recordings of Neural Activity in the Infralimbic Cortex, Insular Cortex and Basolateral Amygdala Across Heroin-Seeking Behavior**

The infralimbic cortex (IL) is implicated to regulate drug seeking due to prior evidence indicating its role in promoting the extinction and inhibition of cocaine seeking. The physiological nature of the IL regarding its role in mediating the extinction of opioid seeking has yet to be determined. However, it's expected that the IL interacts with other regions known to modulate these behaviors. Previous work has demonstrated that there are extensive connections between the IL and the basolateral amygdala (BLA), and the rostral agranular cortex (RAIC). Human and rodent studies indicate the BLA and RAIC hold heavy influence in managing drug cravings and drug-seeking behavior, further reinforcing the perceived interactions between these three regions. The similarities of humans and ratsgentically, physiologically and anatomically emphsize the translation of these observations to humans.Therefore, we strove to observe the neurophysiological interactions between these regions during self-administration, extinction and reinstatement of heroin seeking through utilizing innovative electrophysiological recording techniques to simultaneously record for the regions of this network throughout this behavioral procedure. Although this work is ongoing, the appearance of a dynamic network in this IL-RAIC-BLA circuitry during heroin seeking behavior has become evident in the preliminary analyses. Specific subpopulations of units in the IL and RAIC increase in activity during goal directed behaviors, whereas local field analyses demonstrated theta and alpha oscillations varied due to altering contingencies present in self-administration, extinction, and reinstatement. Further data collection and extensive analyses may reveal how the current corticolimbic circuit forms a functional network during the extinction of heroin seeking.Upon conclusion of the current study, additional investigation of this network to determine the involvement of other regions in regulating drug seeking behavior are essential to further shape our understanding of such processes.

Cartagena, Santiago

Institution: *PRI - University of Puerto Rico - Mayagüez*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Santiago Cartagena,
Anand Vyas

Abstract Name: **Investigation of Blister Formation in Post-Processing of Additively Manufactured Parts**

Support removal is a necessary post processing step in many additive manufacturing processes. Acrylonitrile-butadiene-styrene (ABS) parts printed on a Stratasys FDM (Fused Deposition Modeling) can be printed with a soluble support that may need to be dissolved in an ultrasonic tank containing sodium hydroxide. However, parts removed from the bath occasionally have voids forming within thick cross-sectioned parts, which cause blisters to be seen on the surface. This project investigates potential root causes of the void formation. Initial experiments were conducted to identify the frequency propagated in the tank and time as key factors in causing the voids. Subsequent experiments are also conducted regarding the object's position in the tank, geometry, and temperature of solution in which the results suggest that thermal acoustic energy concentrates near the center of the tank and objects closer to this area are more prone to void formation than others. Lowering the temperature and intensity of acoustic energy intensity both appear to reduce likelihood of void formation in ABS parts subjected to ultrasonic cleaning.

Carter, Alexandria

Institution: ***SC - The Citadel***

Discipline: Physics/Astronomy

Author/Contributors:
Alexandria Carter,
Frank Hale,
Kaelyn Leake

Abstract Name: Wearable Carbon Dioxide, Oxygen, Carbon Monoxide, and Methane Sensor within OSHA limits

According to the Center for Disease Control and Prevention, accidental gas poisoning affects approximately 50,000 people every year in North America alone across a wide variety of locations. A wearable, lightweight device that detects toxic forms of gas is ideal when prioritizing safety for individuals who need this information displayed while on the move. The purpose of this experiment is to design one device that measures exposure to common toxic compounds found in nature: Carbon Dioxide (CO2), Oxygen (O2), Carbon Monoxide (CO), and Methane (CH4). The current design uses gas sensors from Adafruit, Arduino, and Grove to detect dangerous concentration levels. The Occupational Safety and Health Administration (OSHA) defines maximum exposure in parts per million (ppm). A microcontroller and electronics have been designed to display concentrations in ppm on an LCD screen and provide a 1 second audio alert and danger signal if over OSHA standards. The system can measure CO2 within 5.7%, O2 within 4.6%, and CO within 1% of a commercial sensor. This project is 6 in x 3 in with plans to reduce to 1in x 1in.

Carter, Austin

Institution: ***MN - Gustavus Adolphus College***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Quintin Morris,
Angelina Hathty,
Austin Carter,
Ezekiel Sundberg

Abstract Name: Yoga As An Approach to Mental Recovery 48 Hours After an Intense Workout

Background: Along with physiological changes, knowledge about yoga and meditation strategies for post workout mental recovery has been investigated. Results show that it improves mental clarity and reduces stress and anxiety levels. Purpose: The purpose of this study is to examine the effects of a 30 min yoga session on mental recovery 48 hours after a high intensity workout. Hypothesis: We hypothesize that if a yoga session is done immediately after an intense workout, it will produce greater mental recovery compared to those who do not participate in the yoga session. Methods: Twenty undergraduate students will complete a 30 minute intense workout. Following the workout, the intervention group will complete a thirty minute yoga/meditation session. The control group will not do anything outside of their usual routine. Conclusion: If our results align with our hypothesis, individuals can incorporate yoga into their exercise routine to benefit overall mental health and recovery.

Carter, Grace

Institution: *AR - Arkansas State University*

Discipline: Communication Science and Disorders

Author/Contributors:
Grace Carter,
Blair Casey,
Christina Burnette

Abstract Name: Apple iWatch Noise Meter Accuracy: Can We Make "Sound" Judgements on the Noise Alerts?

Background: Noise-induced hearing loss is a permanent type of hearing loss that is a result of loud noise exposure over time. The effects of noise-induced hearing loss often go unnoticed until irreversible damage is already done. To preventindividuals from developing noise-induced hearing loss, mobile phone companies like Apple have developed a noise monitoring application (app) for the AppleiWatch which alerts individuals when they are in the presence of dangerous noise levels. It is extremely important that this application provides accurate noise alerts to the user so that appropriate measures can be taken to limit the exposure level and/or duration. The aim of this study is to measure how accurate the noise measurements of the Apple iWatch are.Methods: Noise levels will be measured atsixteen different locationsusing various models of Apple iWatches. These measurements will then be compared to measurements obtained by the iPhone app, theNational Institute of Occupational Safety and Health (NIOSH) noise meter appwhich has been found to provide noise measurements within +/- 1 dB ofLarson Davis type 1 sound level meter (Kardous and Shaw, 2016).The noise levels in each environment will be measured by both the iWatches and the reference iPhone NIOSH noise meter app. Measurements will be compared for each environment and analyzed for significant differences in order to determine how accurate the iWatch measurements are.Data will be collected and analyzed Spring 2023 pending IRB approval.

Caruso, Zoe

Institution: *TX - Lone Star College*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Zoe Caruso

Abstract Name: "Oohs, Ahhs, Big Applause, and a Standing Ovation": The Creation of Ambiguity-Driven In-Groups and Absurdist Humor

This research examines the relationship between three musical comedy productions, Something Rotten, Spamalot, and Spamilton, and the audience's sense of rhetorical belonging. By expanding upon Thomas Shultz's theory of incongruity-resolution based humor, the research first elucidates how ambiguity-driven humor, which has primarily been applied to linguistics, can be translated to identify musical ambiguity. Next, a comparative analysis of the three musical comedies was conducted with an emphasis on observing outrageously outlandish characters and events, levels of intertextuality, and linguistic and musical ambiguity in each. Finally, the research investigates how the humor within each production is used for promotional material with an aim of advertising the show to multiple types of audiences, including those which would not typically be associated with musical theater, to encourage the formation of new in-groups. The playwrights use meta recognition— specifically of elitism associated with history, literature and theater— to appeal to the diverse in-groups within the audience. The findings suggest the sense of belonging invites new audience members to identify with the arguably still-elitist theater community and contributes to the musical theater pop-culture movement's aim for social progressivism. Further research can include expanding the sample size of musical comedies analyzed or exploring the musicals through another theory of humor such as the superiority or violation theories.

Cascone, Julianna

Institution: ***VA - Virginia Commonwealth University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Julianna Cascone

Abstract Name: The Use of Sequential Bilingualism as Protection against the Symptoms of Alzheimer?s Disease in Older Adults

Bilingualism has been shown to promote cerebral growth, which includes increased gray matter, white matter, and cognitive reserve. These neurological benefits allow individuals to maintain cognitive function over the course of late adulthood, providing resistance against the symptoms of Alzheimer's Disease. In a comprehensive literature review, this study investigates the extent to which foreign language learning and acquisition in late-middle to late adulthood, or sequential bilingualism, contributes to cognitive reserve and gray matter volumes in the brain, with the subsequent aim of delaying the onset of Alzheimer's Disease. Experimental studies measuring cognitive ability, cerebral atrophy, and gray matter volumes were conducted among groups of bilinguals and monolinguals in various countries, including Canada, China, and the United States. Across studies, participants were designated a battery of cognitive tasks that tested selective attention, inhibitory and executive function, and language proficiency; this was followed by brain scans that measured gray matter volume and cerebral atrophy. In a majority of studies, researchers found that bilingual participants attained higher scores on cognitive tasks. For experiments in which bilinguals and monolinguals performed equally, bilinguals demonstrated less neurodegeneration and higher gray matter volume than their monolingual counterparts. Given the growing prevalence of Alzheimer's Disease among the global elderly population, novel treatment interventions that can effectively delay or mitigate symptoms of Alzheimer's are becoming increasingly important for both extending and improving quality of life. Sequential bilingualism represents a non-invasive and cost-accessible strategy in the field of neuroscience. Further research and experimental trials to validate the interventional capacities of this approach are warranted.

Casey, Blair

Institution: ***AR - Arkansas State University***

Discipline: Communication Science and Disorders

Author/Contributors:
Grace Carter,
Blair Casey,
Christina Burnette

Abstract Name: Apple iWatch Noise Meter Accuracy: Can We Make "Sound" Judgements on the Noise Alerts?

Background: Noise-induced hearing loss is a permanent type of hearing loss that is a result of loud noise exposure over time. The effects of noise-induced hearing loss often go unnoticed until irreversible damage is already done. To preventindividuals from developing noise-induced hearing loss, mobile phone companies like Apple have developed a noise monitoring application (app) for the AppleiWatch which alerts individuals when they are in the presence of dangerous noise levels. It is extremely important that this application provides accurate noise alerts to the user so that appropriate measures can be taken to limit the exposure level and/or duration. The aim of this study is to measure how accurate the noise measurements of the Apple iWatch are.Methods: Noise levels will be measured atsixteen different locationsusing various models of Apple iWatches. These measurements will then be compared to measurements obtained by the iPhone app, theNational Institute of Occupational Safety and Health (NIOSH) noise meter appwhich has been found to provide noise measurements within +/- 1 dB ofLarson Davis type 1 sound level meter (Kardous and Shaw, 2016).The noise levels in each environment will be measured by both the iWatches and the reference iPhone NIOSH noise meter app. Measurements will be compared for each environment and analyzed for significant differences in order to determine how accurate the iWatch measurements are.Data will be collected and analyzed Spring 2023 pending IRB approval.

Casey, Brayten

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Danielle Kmieciak,
Lily Boe,
Brayten Casey,
Bethany Rhodes,
Justin Swanson,
Kayla Wylie

Abstract Name: Role of Motivation on Academic Success B

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation is and how it impacts the academic success of college students. Factors that will be studied are intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation studens vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions addressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Casey, Elena

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: FAN Abstract

Author/Contributors:
Elena Casey,
Cheryl Jiménez Frei

Abstract Name: Rural Voices / Voces del Campo

In the US, Latinx; Hispanic populations have been disproportionately affected by the COVID-19 pandemic. To learn about the health concerns and life experiences of rural, migrant, and farmworking communities, in 2020, Drs. Elena N. Casey (Languages) and Cheryl Jiménez Frei (History), together with faculty and students from programs across the humanities and health sciences at UW-Eau Claire, launched Rural Voices / Voces del Campo. Rural Voices aims to create a repository of oral histories, digital exhibits, and artifacts documenting the history and lives of communities and individuals in western Wisconsin, with attention to Latinx migrant community members during and beyond COVID-19. This repository will serve as a resource to help future scholars, public health providers, policy makers, and the public understand the impact of Covid-19 and diversity of communities in the rural Midwest; a tool to enable rural and Latinx residents to express their experiences of immigration, culture, family and daily life in western Wisconsin; a teaching tool to educate students about the experiences and contributions of rural and migrant community members; and a resource with the potential to advocate for policy changes and public health services to meet the needs of rural and migrant populations. As a multidisciplinary oral history interview project, Voces trains students in a variety of research capacities: forming community partnerships, conducting, transcribing and translating interviews, creating and curating digital archives, and analyzing data for presentation and publication. The project's inclusion of Spanish-language interviews and Spanish-speaking communities expands the participation of Latinx and Hispanic students in undergraduate research. Our talk will contribute to raising the profile of undergraduate research in the arts by summarizing the structure, challenges, and progress of Voces del Campo to-date and providing ideas for embedding oral history research in courses and curricula in a variety of academic disciplines.

Casey, Lauren

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Music

Author/Contributors:
Tessa Ferry *Christina Westman* *Elise Williams*,
Nick Zuck *Lauren Casey*

Abstract Name: Percussion Activities with Adaptations for DEI and Integration of National Music Standards

This presentation will showcase graphic adaptations created for the secure setting of a juvenile detention center housed inside a jail. Social-emotional learning applications and social justice standards were connected with national music standards for lesson plans integrating the adaptations. Due to interest of the students involved inside the detention center, Latin rhythms were chosen as a major focus area. Rhythmic patterns for claves and basic Latin idioms were chosen and paired with specific Latin songs. Because different students needed different types of adaptations, a composite template was developed to include cues of words, images, music notation on a staff, and adaptive notation with counting boxes integrated to depict the organizational structure of the rhythm. How to show special effects such as accents, tremolos, and brushing technique to add sound on the tabletop and on clothing will be demonstrated. Students in the juvenile detention center assisted in creating each layer of adaptations, performing them, and conducting them. Input provided from juveniles for how to best facilitate their successful responses will be shared. Latin styles reflected by properties of music included switching between major and minor chords frequently, triplet patterns in both accompaniment and melody lines, and offbeat accents were represented across different cultures. Examples will be performed while graphics are shown with audience invited to join in and participate.Rhythms included three-two Son, three-two Rhumba, Samba, Bossa Clave, Samba Clave, swing patterns, Tumba, and Merengue, with each of these rhythms being paired with one or more songs for the music lessons. Considerations for meeting the needs of everyone in the group when those needs are not the same will be explored. Hasty considerations based on jail precautions and the pandemic will be described. Charts to show connections for social justice, social-emotional learning, and national music standards will be presented.

Casper, Carly

Institution: ***IL - North Central College***

Discipline: Computer Science/Information Systems

Author/Contributors:
Carly Casper,
Andrew Klein

Abstract Name: Investigating Spatial Representation of Sea Ice Concentrations at Coastal Sites in the Western Antarctic Peninsula

In 2019, the macroalgal distribution along a latitudinal gradient (64°-69° S) was sampled at fifteen coastal sites along the West Antarctic Peninsula. A strong negative correlation between total macroalgal cover and sea ice concentration was documented. However, the remote sensing-derived sea ice concentrations used in this analysis are at a larger spatial scale (25 kilometers on a side) compared to the size of the sampling sites (~100 meters across). To investigate differences in measured sea ice concentrations across these two spatial scales, moderate spatial resolution Landsat satellite imagers (30-meter pixel resolutions) were used to determine how representative the large footprint sea ice concentrations were of that occurring at the smaller sampling sites. An algorithm based on a Normalized Difference Snow Index (NDSI) approach classified the Landsat images as either sea ice, clouds, or ocean within 100, 300, and 3000 meter buffers around the site. In general, the larger footprint sensors indicated lower sea ice concentrations than the Landsat observations; the differences observed were consistent regardless of buffer size around each site. This indicates that while the sites had higher sea ice concentrations than retrieved for the larger pixels, the higher concentrations appear to be consistent at spatial scales from 100s to 1000s of meters. Wind and current exposure were ruled out as a major cause for the scatter in the observed correlation between sea ice concentrations and macroalgae coverage. Understanding the relationship of this data provides a model which can be used for global conservation of macroalgae in the future.

Casper, Lauren

Institution: *IL - North Central College*

Discipline: Environmental Studies

Author/Contributors:
Lauren Casper,
George Queisser,
Reed Perkins

Abstract Name: **Mapping Walkability in Naperville, IL: A Community-Engaged Project**

Community walkability is vital for personal health, social equity, economic development, and fighting climate change. Walkability is how accessible walking is for residents in terms of leisure, exercise, access to services, or traveling to work. In order to determine the spatial variability of walkability within Naperville, IL, stakeholders including North Central College and the Naperville Environment and Sustainability Task Force (NEST) worked together to create a walkability assessment. This had never been done for Naperville; it would allow the city to see how walkable their city is in order to decrease their carbon footprint as well as to improve community sustainability. NEST identified three key characteristics for local walkability: distance to destinations, safety, and pleasantness. One of the ways this can be analyzed is through GIS, which is used to map and show spatial relationships. From each residential building in Naperville, a 15-minute walking service area was generated in ArcGIS for seven destinations: parks, grocery stores, retail centers, public transit stops, and elementary, middle, and high schools. If a house was within walking distance of one of the destinations, one point would be given to that house. A total walkability score was created and mapped in a multi-factor walkability map. The results indicated that walkability in Naperville is highly spatially variable across the city. The city can use these findings to identify and improve areas with lower walkability scores in the city, as well as to improve sustainable urban planning.

Cassaniti, Vivian

Institution: *GA - Georgia College and State University*

Discipline: Political Science

Author/Contributors:
Vivian Cassaniti

Abstract Name: **Gender Gap in Social Welfare Policy Attitudes**

Gender differences in public opinion and policy attitudes have been a hallmark of American politics for many years. Gender differences are evident in how women and men respond to contemporary issues. For example, women are more likely than men to support gun control measures, access to abortion, and increased spending on social welfare programs. Women are less likely than men to support the death penalty, the use of military force to settle international disputes, and stricter immigration policies. Furthermore, gender patterns in public opinion extend to several other public policy issues under the umbrella of social welfare. Political science studies show that women are more likely to identify as Democrats than men and are more likely to express opinions that are consistent with Democrats' policy positions. However, there are more important differences between women based on race, ethnicity, and other demographic factors. Why are there systematic gender differences in attitudes to public policy issues? What are the factors driving these differences? What role do other factors, such as partisanship and racial and ethnic identity, play? This study explores the dynamics of these gender differences and how they shape American politics. This study sheds light on what gendered patterns of public opinion look like in the United States, what the underlying factors drive these patterns, and how gender interacts with other identities to influence political attitudes. To examine how partisanship and other identities influence gender disparities in social welfare policy attitudes, this study analyzes data from the 2021 General Social Survey.

Cassell, Nichole

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Chemistry/Materials Science

Author/Contributors:
Junaid Hasan *Nichole Cassell* *Joseph Kannel*
Matthew Ray

Abstract Name: Microscale Synthesis of Fusible Alloys and Low-Melting-Point Metallic Nanoparticles

Fusible alloys melt at a low temperature and typically consist of metals such as indium, gallium, bismuth tin, and zinc. These alloys can be used in applications such as electrical solder, thermal fuses, liquid metal coolants, die casting, and rapid prototyping. Additional metals such as mercury, lead, cadmium, and even thallium could also be used but are more restricted in their potential applications due to high toxicity. Some of these metals, such as indium and gallium, are relatively expensive making it advantageous to conduct microscale research of new fusible alloy compositions on a small scale. Such syntheses are challenging due to the comparatively high surface area to volume ratio of microscale samples leading to significant oxide formation when being mixed in the melt phase. A method has been developed to prepare alloy samples of various compositions at a 500 mg scale using a rosin-based flux to protect the molten surface and promote mixing without the need for a vacuum furnace or inert atmosphere. The resulting alloy samples were characterized by dynamic scanning calorimetry (DSC) and optical microscopy and were found to have the expected melting points and microstructure when compared with known phase diagrams found in the literature. Fusible alloy samples were then converted to low-melt-point metallic nanoparticles using an ultrasonic nanoemulsion method. Samples of the selected alloy were pre-heated and sonicated in mineral oil using a probe sonicator. The resulting high shear converted droplets of molten metal into particles ranging in size from tens of nanometers to a few microns depending on the intensity and duration of the applied sonication. Particle size and distribution were characterized by optical and scanning electron microscopy. The methods used to prepare and characterize fusible alloy samples and nanoparticles will be discussed.

Cassidy, Haleigh

Institution: ***FL - Jacksonville University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Stoeber,
Roberto Simona Jr.,
Haleigh Cassidy,
Rachel Howard

Abstract Name: Examining the abundance, distribution, and behavior of Gray Seals (Halichoerus grypus) in the presence of white sharks (Carcharodon carcharias) off of Scatarie Island, Nova Scotia

Great white shark (Carcharodon carcharias) migratory patterns within the Atlantic Canada waters have been tracked and studied by the OCEARCH research team since 2018. As part of their migration, adult sharks typically spend most of the summer in the coastal waters of the Northern United States and Atlantic Canada. During this span, the gray seal (Halichoerus grypus) serves as an energy-rich food source for these apex predators. Gray seals form dense colonies on rocky outcrops near shore, but must travel to deeper water to forage. While traveling to deeper water, foraging, and returning to the colony, these seals are vulnerable to predation.Gray seals often congregate on “launch pads”, or shallow areas offshore of the colony, which they use as staging and return areas for their foraging expeditions. To examine the abundance of gray seals at a well-established colony in Nova Scotia, as well as the influence of nearby predators on seal behavior, small unmanned aerial vehicles (UAVs) were deployed off of Scatarie Islands. These UAVs were used to assess the abundance of seals, identify shallow water launch pads, and observe seal behavior. Data collection via drone surveillance provided high-resolution imagery of animal locations and behavior within the research area without disturbing the seal colony. The information gained through this study was then provided to OCEARCH to enhance their understanding of this popular white-shark feeding ground and assist with future fishing efforts.

Castellano, Rafael

Institution: *NY - United States Military Academy*

Discipline: **Mathematics**

Author/Contributors:
Rafael Castellano

Abstract Name: **Tabletop Training**

This project serves to optimize the strategies for playing two board games: Ticket to Ride and Shut the Box.The board game Ticket to Ride focuses on accumulating points by building connections between cities and completing routes specified by destination tickets. The game is designed for players to determine which routes are advantageous towards reaching the highest score, which leads to multiple avenues for mathematical and strategic analysis. This project serves to find an optimized strategy to play the game, along with marking critical routes to maximize earned points. Using R Studio and its visualization resources, the game is replicated in an online environment to be studied using different graph analysis techniques. Graph theory and optimization algorithms are then applied to study unearthed mathematics behind the game. Key objectives include a way of prioritizing destination tickets, identifying important cities, and selecting trains to collect.The board game Shut the Box focuses on shutting numbered tiles through dice rolls to minimize the sum of the remaining tiles upon completion of the match. This project serves to give players an optimized strategy which can increase their likelihood of winning based on which available tiles they shut throughout the game. Using discrete mathematics, probability without replacement, and decision tree analysis, we analyze the game from a decision-making standpoint to develop and test in-game strategies to aid in beating the game. In this project, we code a simulation of the game to gather statistics related to the performance of strategies made for the game. Following the completion of simulations, the focus is assessing decision trees that spawn from the elimination of certain tiles compared to others to find an optimized and usable strategy. A key result of this project will be a comparison of usable in-game strategies that are mathematically optimized through statistical analysis.

Castellanos-Martinez, Jesse

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Economics**

Author/Contributors:
Erica Kladar,
Jesse Castellanos-Martinez,
Connor Garland,
Casey Rottier

Abstract Name: **An Updated Examination of Climate Change Views Among Wisconsin College Students Using Surveys Conducted in 2023**

Climate change (CC) is perhaps the most important issue of our time. Citizen public opinion will likely be a significant determining factor regarding if/when CC mitigation policies will be enacted. Additionally, news media reports suggest that young people, including college students have been increasingly active in terms of calling for action to address CC. We will conduct surveys of Wisconsin (WI) college students in February 2023 with the expectation of receiving at least 600 completed surveys from at least three institutions to provide a current account of CC views among WI college students. A CC index (CCI) score will be calculated using responses to questions about if CC is happening and what are its primary causes as well as an understanding of CC science and concern about and obligation to act regarding CC. CCI scores range from -10 to 10 with higher scores indicating more alignment with the scientific realities of CC. This poster will present comparisons of CC views based on age, gender, major and political ideology as well as across the different institutions including ordinary least squares regression analysis. Because we have not collected the data yet, we cannot report any results at this time. For context, our poster will also compare the CC views from these 2023 WI college student surveys to the CC views expressed in previous surveys conducted among UW-Eau Claire (UWEC) college students in 2017, 2018, 2021 and 2022. Lastly, we will provide additional context by comparing the CC views from all of our WI college student surveys to similar work we have done comparing CC views between American and Chinese citizens from multiple survey years. This poster is connected to another submitted poster analyzing data from surveys conducted of both UWEC college students and also Chinese and American citizens in prior years.

Castellon Almanza, Joselyn

Institution: ***VA - George Mason University***

Discipline: Education

Author/Contributors:
Joselyn Castellon Almanza

Abstract Name: First Generation College Students and their Housing Status on College Belonging

Our population is becoming more diverse with each generation. With many financial and housing options, this has resulted in a big portion of the college student population being first-generation students yearly. This is representative in the literature, especially regarding first-generation identity and housing status. First-generation students struggle with a lack of information and unknown expectations as they face higher education with no reference point. Added to the first-year experience, it could result in a challenging and confusing year. Housing status as a topic has been explored as learning communities, residential dorms, and commuting from home. These living spaces provide different resources that could aid the college experience. Studies have investigated its impact on academic success and retention, but not college belonging. College belonging is about a sense of security, and its investigation has been seen to support academic success. Thus, focusing on this topic could bring about ways to increase the quality of the college experience. As a result of past literature, this study will explore the impact of first-generation and housing status on college belonging with first-year students. I will explore the connotations and feelings behind the statuses of "first-generation" and housing, with specifics to the terms "commuter" and "resident." I will then see if it may influence a student's sense of self and how they think others may view them, thus affecting their sense of belonging. My investigation is based on hourly in-person interviews with first-year students that fit those identities. Through this, I will explore the relationship between first-generation and housing status on college belonging. I hope to provide more support for students' overall success and well-being in college with my anticipated findings.

Castro, Alexis

Institution: ***TX - Lone Star College***

Discipline: English/Linguistics

Author/Contributors:
Alexis Castro

Abstract Name: The Promise of a Profitable Outpost: The Frontier Metaphor and Space Commodification

This study analyzes the use of the frontier metaphor in the promotion of space exploration with an aim to uncover the link between language and commercial interest in outer space. Building upon Frederick Jackson Turner's "Frontier Thesis," this investigation employs an analytical framework developed from psycholinguistic and post colonial studies to analyze John F. Kennedy's use of the frontier metaphor in his speech at the Aerospace Medical Health Center (November 1963). The framework ties American expansionism to economic profit through the work of William Appleman Williams who argues the frontier's American exceptionalism was a key factor in the growth of the American empire. Additionally, the framework establishes the influence of diction through Max Black's "interaction" and George Lakoff's "state-as-person" metaphors, which argue intrinsic connotations attached to words skew perceptions. This study highlights the practical use of this rhetoric with the inclusion of Paul Thibodeau's cognitive experiments measuring the effects of language on social policy. The analysis implies Kennedy's metaphor transforms outer space into another frontier in the American consciousness whose crossing is indelibly American and imminent. Paired with the expectation of a profitable outpost, the usage of the frontier metaphor expands American economic ambitions into outer space. This analysis serves as a point of exploration of the previous uses of the frontier metaphor to better understand their modern use.

Castro, Maviz

Institution: *CA - California State University - San Bernardino*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Fernanda Escorza,
Maviz Castro

Abstract Name: **Developing Synthetic Methodology to Optimize a Series of Novel Anti-Malarials**

The human parasite,Plasmodium falciparum, kills nearly 500,000 people a year, with the most fatalities occurring in tropical areas that disproportionately affect sub-Saharan Africa. All clinical symptoms of the disease result from the intraerythrocytic development of parasite. During this part of the life cycle, the parasite expresses an array of proteases (enzymes that degrade other proteins) to carry out many essential processes, such as host cell protein degradation, host cell invasion, and parasite protein export. Previous studies developed a piperazine-based hydroxamic acid scaffold, and we are currently testing a diverse alcohol substituent at the N4 positions. We decided to use an array of alcohols since it is inexpensive, commercially available, and structurally diverse. To achieve this goal, we developed a synthetic methodology that uses shvo's catalyst for amine and alcohol coupling. Throughout the optimization, we determined that temperature, solvent, and equivalence of the alcohol, are factors for a good starting material conversion. <p lang="EN-US">

Castro, Xavier

Institution: *MN - Minnesota State University - Moorhead*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Dustin Bloodgood,
Bridgett Grosz,
Brennen Bordwell,
Xavier Castro

Abstract Name: **XRF Analysis of Pb Concentrations in Soils in and near Moorhead, MN**

Prior to its ban in 1996, leaded gasoline was available for use in all vehicles. We suspected there was an increased concentration of lead in the soil near Highway 10 near Moorhead Minnesota. The purpose of this experiment is to determine the impact of anthropogenic lead in soil.We collected 6 urban soil samples within Moorhead along parks, residential areas, and our college campus. We collected 18 rural soil samples east of Moorhead along highway 10 including two perpendicular transects to highway 10. A transect 1 mile, and a transect 7 miles east from Moorhead going North and South respectively. We collected both surface samples and samples approximately 6 to 12 inches in depth. We analyzed the samples by drying the samples at 100°-105°C for 18-19 hours. Using an agate mortar and pestle, we ground the samples to a powder. A Hitachi X-Met8000 Handheld-analyzer was used to analyze the elemental composition of the samples. We aimed to determine correlations in lead levels.Pb concentrations in urban areas ranged from 17 to 175 ppm. Rural variations showed a decrease in lead concentrations eastward along Highway 10 as well as a decrease away from highway 10 for the transect taken 1 mile from town. In rural and urban samples, we observed Pb statistically significantly decreased with depth.Our results show a trend in lead concentration with location and depth consistent with air-deposited lead from leaded gasoline. Although, regions with no obvious anthropogenic lead were decreasing in Pb levels relating to depth, as well. This suggests that soil genesis processes may also be a factor in the Pb concentrations, and warrants further research. Although most samples remained under the 100 ppm EPA guidelines for residential gardens, 2 urban samples taken along a major street exceeded this value

Caterer, Zach

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Jordan Langlois,
Zach Caterer,
Connor McKeown,
Sam Stumo,
Rahul Gomes,
Michael Walsh

Abstract Name: Deep Learning and Feature Selection for Classification of Kidney Tissue Microarrays

Renal function is an essential marker in the classification of renal disease and clinical symptoms of renal failure develop when there is 15% renal function. In this study, we used infrared spectroscopic (IR) imaging to investigate biomolecular markers from renal transplant biopsies. These images are used for the classification of regions of fibrosis from biopsies containing renal cell carcinoma (chromophobe and oncocytoma) and the prediction of fibrotic proliferation using biochemical signatures. IR spectroscopy is a diagnostic approach utilizing human tissue to label biochemical signatures. Images are captured in several hundred wavelengths in the infrared region of the electromagnetic giving researchers access to more information than traditional RGB images captured by a microscope. While images captured in several bands are great for disease diagnosis, it poses significant challenges for manual cell review by a pathologist. To address this issue, a fully automated pipeline for image processing is being explored. Preliminary research involves identifying feature importance using various algorithms, each of which returns the significant spectral bands necessary for detecting regions of fibrosis. The outputs are ranked and compared to find the first 150 most important features. After feature selection, a deep learning model called UNet will be applied for the classification and identification of fibrosis. Our results will then be compared to the discriminate analysis of the Bayesian classification used in clinical applications.

Caterer, Zach

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Leah Rook,
Jocelyn Stepanek,
Zach Caterer,
Katie Feuker

Abstract Name: Fourier Transform Infrared Spectroscopic Imaging for Detection of Biomarkers in Patients with Alcoholic Steatohepatitis

Infrared spectroscopic imaging has been shown to be useful as a diagnostic tool for tissue imaging. IR imaging allows for a label free approach to identifying biomarkers and molecular changes associated with disease progression. Alcoholic steatohepatitis (ASH) is a progressive liver disease caused by prolonged, excessive alcohol consumption. It often leads to liver cirrhosis. ASH is difficult to diagnose because clinically it presents similarly to other liver diseases, like non-alcoholic steatohepatitis. A liver biopsy is the current standard diagnostic method for diagnosing alcoholic steatohepatitis. The current process involves staining and diagnosis by a pathologist, which requires an extended period of time. Early diagnosis is important to prevent further liver damage. IR imaging provides a rapid imaging technique that can be used to identify biomarkers in tissue linked with ASH. In this study, we applied Fourier Transform Infrared (FT-IR) Spectroscopic Imaging to obtain detailed images of liver tissue samples from patients previously diagnosed with ASH. These images contain biochemical information that allows for the determination of biomarkers and biochemical changes associated with alcoholic steatohepatitis.

Caulfield, Megan

Institution: *VA - James Madison University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Justin Blevins,
Megan Caulfield

Abstract Name: **Tactile Instructions for Wearable Physical Rehabilitation**

Patients of all ages, who have a range of medical conditions or injuries, use physical therapy to help ensure they have a full recovery. Physical therapy is useful to help manage pain, regain mobility and comfort, and return to activities. However, research has found as low as 35% of patients actively do at-home exercises for physical therapy. When patient adherence is low, recovery is less effective. This leads to further complications of the patient's condition and can hinder future recovery. Low self-efficacy is a leading reason patients say they do not do at-home exercises, as they believe they cannot effectively carry out an exercise on their own. The proposed research seeks to explore wearable computing systems to develop a device that enables patients to receive haptic feedback on their movements while at home and apply corrections as though a therapist was working hands-on with them, thereby increasing their confidence in completing the activity.To date, wearable technology most frequently uses accelerometers and inertial measurement units to track human motion and performance. Designing wearable devices that are comfortable, adjustable, and interpretable by the wearer, is challenging. Our current design uses haptic feedback to help users receive feedback on simple activities. We developed a glove with embedded motors that vibrate guiding the movement of the patient within a two-dimensional plane. Ongoing research is exploring extensions of this approach to upper-arm mobility by developing novel tactile instructions. A user study will be conducted to explore vibration patterns and examine the upper arm mobility with tactile motor instructions.

Caulk, Rachel

Institution: *TN - University of Memphis- Lambuth*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Rachel N. Caulk *Angela Davenport* *Christina Byers*
Cheryl A. Bowers

Abstract Name: **Self-Esteem in Relation to Online and Offline Communities**

Peacock and Cowan (2019) found that having significant trusting relationships increases one's self-esteem. While these trusting relationships were once formed offline, they are now being developed online as well with the increase in reliance on technology. It follows that Best (2014) found some online communities may also increase one's self-esteem. This study compares the self-esteem of individuals who have a strong sense of community in an online group to those who have a strong sense of community in an offline group. We hypothesize that both groups will have similar patterns of self-esteem. We also hypothesize that those with strong connections to either community will demonstrate higher self-esteem than those with lower connections to a community. Participants were acquired through the Department of Psychology SONA system as well as recruitment in psychology courses. Participants completed the Brief Sense of Community Scale in reference to their online community and then completed it again for their offline community. Participants also completed the Rosenberg Self-Esteem Scale. Data collection is currently underway and will continue through the last week of November, with data currently obtained from 87 participants. The anticipated total number of participants is 120. Upon completion of data collection, Pearson correlations will explore a) the relationship between self-esteem and sense of community in an online group as well as b) self-esteem and sense of community in an offline group. In addition, an independent t-test will compare self-esteem between those who are most strongly connected to an online community and those most strongly connected to an offline community. With technological communication growing rapidly, our relationships with one another will change as well. With these changes, it is important to learn more about how they are affecting us and the way we relate to one another.

Cecil, Julian

Institution: *LA - University of Louisiana at Lafayette*

Discipline: Nursing/Health Science

Author/Contributors:
Julian Cecil *Grant Young* *Jacob Allain*

Abstract Name: **Music Brings a Smile to My Face: Assessing the Effects of Familiar Music on Happiness in Older Adults Living in Long Term Care**

The positive effect of music on overall health and psychological well-being has been well documented. In older adults, listening to music has been correlated to positive emotions, happiness, increased mental awareness, and decreased stress levels. Further, implementing music therapy/programs in long-term care facilities has resulted in improved depression symptoms, improved well-being, and decreased use of mood stabilizing medications.For purposes of this project, only happiness was measured, but aspredicted there wasan improvement in several other aspects of the participants' health and well-being. It is anticipated that this program will be continued beyond the designated four week mark because of interest in the service aspect of the project from current students. This programallowed students from complementary disciplines to participate in a research project that assessedthe effects of familiar music on happiness in older adults living in long term care. Two nursing students and a recent psychology graduate, who were allwell versed in Cajun and Zydeco music performed a one-hour music set once a week for four weeks for residents of a local assisted living facility. Permission was granted by the the facility and all COVID protocols were followed. Approval was also obtained from the university's IRB department prior to implementation of the program.Prior to the first music program, residents were asked to complete a reliable and validated, Subjective Happiness Scale, consisting of 4 questions with Likert scale responses via pen and paper. Students, with the assistance of their faculty advisors, enteredthis data into the Intellectus software program. At the end of the fourth/final music set, residents wereonce againasked to complete the Subjective Happiness Scale. Students are inputting post project scale data into the Intellectus software program. Data will beanalyzed using a paired t-test to evaluate effectiveness of this intervention.

Cedergrund, Gustav

Institution: *CO - University of Colorado at Boulder*

Discipline: Chemistry/Materials Science

Author/Contributors:
Gustav Cedergrund *Artem Pimachev* *Sanghamitra Neogi*

Abstract Name: **Deep Learning Model for Designing High-Entropy Materials with Optimal Electronic Properties**

In recent years, high entropy alloys (HEA) and ceramics (HEC) have brought new fervor to the field of material informatics – the design and discovery of materials leveraging data-driven approaches. HEAs or HECs consist of five-or-more metals bonded together in relatively equal proportions. These materials exhibit remarkable properties, such as increased strength and wear resistance to high voltages and temperatures. Therefore, they are attractive in a broad range of applications, from power electronics and solar cells to quantum computers and optoelectronics. Despite these benefits, the largest challenge to its implementation arises due to the considerable variability of its properties. Small modifications in the crystalline lattice or composition of atomic species strongly influence the behavior and ultimate performance of HEA/HECs. It is thus essential to establish a direct structure-property relationship to leverage the full potential of these materials for various applications. We develop (1) a forward learning model to predict targeted properties of HEAs with known configurations. We use kernel ridge regression with n-gram descriptor generation for the forward learning model. This model successfully predicts the band-gap and formation energy of HEAs. A higher band-gap implies higher breakdown voltages useful for electronic devices and formation energy quantifies the stability of the material. Additionally, we develop (2) a reinforcement learning (RL) framework to discover atomic configurations that optimize those targeted properties. The RL framework will train and work within an action space, tweaking the configurations according to approved steps. A trained neural network will map how shifts in the lattice structure change the properties predicted by the forward model. Once completed, this combined model approach will guide steps to alter a given configuration to one that will exhibit desired properties for target applications. We anticipate that our approach will expedite the discovery of high-entropy materials used in a new wave of technology.

Cerise, Alexis

Institution: *KY - University of Kentucky*

Discipline: Music

Author/Contributors:
Alexis Cerise

Abstract Name: **Tania Le?n's entre nos: The Art of Underlying Musical Structure**

Pulitzer Prize-winning composer Tania León (b. 1943) is a highly regarded composer, conductor, and arts advocate. León's music reflects her ethnic background and experiences, from growing up and receiving classical music training in Havana, Cuba, to moving to New York City as an adult, where she remains today. This presentation offers a close reading of León's piece entre nos, a chamber work for clarinet, bassoon, and piano. Commissioned by the ensemble Tres Neos in 1988, this work features jagged motives and lively, driving rhythms, perhaps inspired by the group's name, which translates as "young three." Upon initial listen, it might appear as if the work were loosely structured, perhaps a result of the unusual meters and indeterminate-like passages, but there is an underpinning level of organization. In this presentation, I examine León's entre nos from several angles and grapple with the following questions: How does León create formal structure? What rhythmic language does León rely on to propel the music forward with intensity? And what is the harmonic and melodic vocabulary that León uses throughout the piece? By examening the pitch, rhythmic, and timbral content in entre nos, I argue that León creates a sense of return within the work despite the lack of pitch centricity and aleatoric passages. Although the pitches and intervallic structures of the motives shift throughout the piece, León's alternation of what I call "active" and "lyrical" sections offer a coherent framework for the listener to grapple with the seemingly less comprehensible pitch content. Ultimately, this piece, which provides insight into León's compositional process and technique, invites the listener to inhabit the liminal space between what is loosely structured yet feels familiar (e.g., active/lyrical sections), and that which is rigidly notated but seems incoherent (e.g., lack of singable melody or exact motivic return).

Cervantes, Ana

Institution: *TX - Laredo College*

Discipline: Sociology

Author/Contributors:
Ana Cervantes

Abstract Name: **Killer Switch: MAOA Aggression Gene Allele**

Monoamine oxidase A (MAOA), better known as the Warrior Gene, is a regulator of neurotransmitters that can be natured, nurtured, or in some cases, both. Research has found that low levels of the gene is associated with aggression. Although the gene can be present among some vile serial killers, human beings can fit the criteria for having low levels of MAOA. In order to analyze data on MAOA, peer-review articles, documentaries, and docuseries were used to characterize the gene. An aggression survey scale was used to analyze physical aggression, verbal aggression, hostility, and anger among gender and age. Analyzing MAOA will serve to determine whether serial killers are biologically influenced, environmentally influenced, or both. Based on the documentaries and docuseries, scientists assumed Ted Bundy possessed the gene since he fits the criteria of having low levels of MAOA and being raised in a "healthy" environment, so nature played a role in him being a serial killer. On the other hand, Richard Ramirez and Joseph James DeAngelo Jr. were diagnosed as "nurture" since they were both raised in poor environments that involved abuse. The ANOVA of Physical Aggression revealed to be statistically significant [F(2,155)=3.905, 0.05] indicating that there is a difference in physical aggression among the gender. Females had a tendency of being more physically aggressive compared to their male counterparts. The ANOVA for verbal aggression, hostility, and anger showed no difference among gender and age. Based on the data, the hypothesis of males ages from 18-29 being the most aggressive was proven not to be supported. Human beings may not acknowledge that their aggression levels can be high, thus this research will go more in depth on an individuals' probability to act on a dangerous scale.Keywords: MAOA, aggression, natured, nurtured, serial killers

Chadwick, Chris

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Chris Chadwick

Abstract Name: Paleontology of an Accreted Terrane, Hunsaker Creek Formation (Permian), Orgon.

Sedimentary rocks of the Permian period (~290-250 million years ago) are exposed extensively throughout the western United States, but are rare within the state of Oregon. The volcaniclastic Hunsaker Creek Formation and the Clover Creek Greenstone outcrop sporadically within Hells Canyon along the western Oregon border. As part of the Wallowa Terrane, they represent strata formed “exotic” to North America in the Permian, far outboard in Panthalassa. Collections on loan from the United States Geological Survey and the Oregon Museum of Natural and Cultural History are being processed with pneumatic air tools to liberate fossils from the hard, dense matrix. Preliminary results show the presence of the brachiopod, Megousia sp., age-diagnostic for the Middle Permian. At least three other brachiopod genera, pectenoid(?) bivalves, crinoid columnals and bryozoans are present and in the process of being identified. These data are significant for future paleobiogeographic studies in comparison with other Permian fauna to aid in determination of paleogeographic positioning of the Wallowa Terrane.

Chairez, Karla

Institution: ***TX - The University of Texas at El Paso***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Karla Chairez *Andrea Hernandez* *Vanessa Cabellos*

Abstract Name: Recipe for Success: Impact of Implementation of Sensory Safe Cooking Classes for Individuals with Autism

Individuals on the Autism spectrum face numerous social, motor, and sensitivity challenges that can inhibit their quality of life. The sensory issues that accompany the diagnosis of Autism Disorderestablish limitations in the amount of nutritious intake consumed; thus, leaving them in a ceaseless state of insufficient nourishment for reasons exceeding their control. The purpose of this service-learning project was to analyze the impact of the implementation of sensory safe cooking classes for individuals with Autism Spectrum Disorder. We hypothesize that the implementation of sensory-safe cooking classes will allow the expansion of their sensory development and established an openness towards experiencing abundant stimuli through tastes, smells, and textures. Eight participants attended cooking sessions catered to their age group and specific sensory needs. Prior to beginning the cooking session participants were asked to complete a pre-survey to measure their relationship with food. Recipes were designed with clear instructions on how to cook specific items such as Spider Sandwich, waffles, smoothies, and energy bites. Safe food options were provided to prevent overstimulation due to the variety of tastes, textures, and smells. Participants were encouraged to make their meals independently and to try new food items outside of their comfort zone. Participants were encouraged to use the cooking tools necessary for making these food items but were assured that if they did not feel comfortable, someone could provide help. At the end of the session, participants completed post-surveys. . T-test has shown a significant difference (t= -2.376, p= 0.049) regarding the question depicting their openness to trying new foods. This data denotes the benefits that the implementation of sensory-safe cooking classes can have on individuals with Autism Spectrum Disorder and their evolving connection to food, tastes, and textures.

Challa, Harshita

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Harshita Challa *Charlotte Brzozowski* *Laura Volpicelli-Daley*

Abstract Name: **Impact of ?-Synuclein Pathology on Excitatory Synapses in Parkinson's Disease**

Parkinson's Disease (PD) is the most common neurodegenerative motor disorder. It is pathologically characterized by aggregates of α-synuclein which are collectively termed Lewy pathology. α-Synuclein is normally highly expressed in excitatory neurons where it preferentially localizes to the presynaptic terminal, however little is known about how Lewy pathology affects excitatory synapses. Our research aims to understand the impact of aggregated α-synuclein on the morphology and abundance of excitatory synapses in the dorsal striatum, a PD relevant brain area.To recapitulate α-synuclein aggregation, we utilize the preformed fibril (PFF) mouse model for templated corruption of endogenously expressed α-synuclein to form insoluble inclusions. Animals received bilateral stereotaxic injections of PFFs into the striatum while monomeric α-synuclein and vehicle injections were used as controls. For synapse morphology analysis at 6- and 12-weeks post injection, we introduced the high-resolution imaging technique Expansion Microscopy (ExM). ExM overcomes the physical limitations of conventional light microscopy by physically expanding the sample in a swellable biopolymer network. Using confocal microscopy, z-stacks of synaptic markers and α-synuclein pathology were acquired in the dorsal striatum. Lastly, the z-stacks were loaded into the IMARIS software for 3D visualization and reconstruction of synapse pairs for quantification and morphology analysis.Using ExM super resolution imaging, our preliminary results show a reduction in the total number of excitatory synapses in the dorsal striatum which indicates synaptic loss 6 weeks after PFF treatment. The data also shows a significant enlargement of vGlut1 terminals containing intrasynaptic α-synuclein aggregates, pointing to a possible impact of small aggregation on synapse morphology.Our results suggest that aggregated α-synuclein causes synapse loss and also affects morphology of excitatory synapses in the dorsal striatum. Furthermore, these findings imply that the presence of Lewy pathology could disrupt excitatory synapses and potentially contributes to overall symptoms of PD.

Challagundla, Sreenidhi

Institution: *CA - Aspiring Scholars Directed Research Program*

Discipline: Biology

Author/Contributors:
Madison Dee,
Sofia Penttila,
Sreenidhi Challagundla,
Sanjana Selvaraj

Abstract Name: **The In-silico and In-vitro Characterization of Epigenetic Drugs (BET Protein Inhibitors and Related BET Pathway Targets) on a Colorectal Cancer Cell Line**

Bromodomain and extra-terminal domain (BET) proteins have been linked to increases in oncogene expression and tumor progression in a wide array of cancers. Previous research on BET proteins has demonstrated that BET inhibitors (BETi) and other drugs in combination can moderately reduce cancer cell proliferation in colorectal cancer. Limited treatments exist for colorectal cancer due to its malignant nature and existing treatments are often costly or ineffective. Our research centers around determining potential BETi in colorectal cancer through in-silico research and testing identified drug candidates in an in-vitro setting. While previous research has been conducted on BETi, few studies examine the effects of BETi in colorectal cancer. So far, we have created a list of one hundred possible BETi drugs. By utilizing a deep learning Cancer Drug Response (Deep CDR) prediction algorithm, we will further narrow down our list of potential drug candidates. We are also working on identifying additional targets in HCT116 cells that are related to the BET protein pathway to expand our research. In order to do this, we are analyzing gene expression datasets using R and ranking candidates related to the BET protein pathway. Once the in-silico analysis is complete, the drugs will be ordered/synthesized and tested on HCT116 colorectal cancer cells. They will be tested through MTT Assays, Western Blot and qPCR and the ones with the most BETi properties as well as the least harmful side effects will be selected. With more BETis available, we hope to increase the number of cancer treatment options for patients.

Challana, Simran

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Business**

Author/Contributors:
Brinley Kowalkowski *Emily Brosig* *Simran Challana*

Abstract Name: **The Effects of COVID-19 on College Students: Pre- and Post-Vaccine**

This research examined the impact of COVID-19 on college students resource loss and stress levels by offering a comparison across pre- and post-vaccine phases of the pandemic. Two research studies will be presented. In spring 2021 (n=155) and spring 2022 (n=256), business school students completed an online survey assessing their resource loss, stress, physical and psychological health, well-being, academic performance and moreduring the global COVID-19 pandemic. In support of COR theory, the 2021 "results demonstrated that students with lower resources (i.e., lower socioeconomic status) reported significantly more resource loss; increases in resource loss were significantly associated with increases in stress; and stress was significantly and negatively related to physical health, psychological health, and well-being. Re-evaluation of resources served as a buffer in the relationship between resource loss and stress." (Murphy et al., 2022, p. 125-6). The 2022 post-vaccine results showed college students reported over five fewer resource losses, but the same levels of stress compared to the pre-vaccine sample. In support of hypotheses from Hobfoll's (1989) Conservation of Resource (COR) theory as well as Hobfoll and Lilly (1993) work on types of resources, students reported a negative impact on stress and resource loss from the COVID-19 pandemic regardless of vaccination status. Further, the effects were more negative for females than males as well as for upper-class students (juniors, seniors, super seniors) compared to lower-class students (freshmen, sophomores). This is one of the first studies to test the differential impact of resource type (personal characteristics,conditions,energies and objects) on the relationship to stress – finding that personal characteristics were the key component explaining most of the variance in stress. Overall, this is the first series of studies to explore the effects of resource loss or gains at two critical points in a global pandemic.

Chan, Catherine

Institution: *WI - University of Wisconsin-Madison*

Discipline: **FAN Abstract**

Author/Contributors:
Prajukti (juk) Bhattacharyya *Catherine Chan*

Abstract Name: **Hidden costs of course-embedded research: Can everyone afford to do it?**

Embedding some aspect(s) of open-ended research and creative inquiry in courses can be an effective way of engaging students who have little or no prior exposure to undergraduate research, are unfamiliar with available research opportunities, or those who do not have time to engage in out-of-classroom activities due to other obligations. This can also be a way to expose students to interdisciplinary research where each student brings unique skills and disciplinary backgrounds to the table to explore a research question together. This helps students learn teamwork, problem solving, cross-disciplinary oral and written communication skills, and self-efficacy. However, despite the various benefits of research-infused courses, associated logistical and administrative challenges can sometimes be prohibitive. For example, such courses often have relatively low enrollment caps to optimize faculty-student interactions and research mentoring. The low enrollment cap can put additional pressure on departments where productivity and resource allocation are measured, at least partly, by the total number of students served. Faculty workload and time investment for teaching research-infused courses is also higher than traditionally taught courses, with little or no commensurate compensation, either financially or in consideration towards tenure/promotion evaluation. Course-embedded research may not always align with faculty's primary research agenda, potentially diminishing research productivity measured in publications. Such challenges can often dissuade instructors and departments from offering research-infused courses.In this presentation we combine the perspectives of a faculty and a campus administrator on various facets of research-infused courses. We will present an interdisciplinary team-taught travel-study course as a case study from a faculty perspective where students from different STEM and non-STEM disciplines participated in open-ended research. We will also examine such courses from the perspective of a campus administrator in terms of long-term program growth, student recruitment and retention, and faculty support.

Chandramouli, Vasavi

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Abigail Lewis *Vasavi Chandramouli* *Kelly McNamer*
Rebecca Jarzynski

Abstract Name: An Analysis of the Representation of Gender within Children's Books at a University CSD Clinic

Speech-language pathologists are increasingly called to provide culturally and linguistically responsive services (ASHA, n.d.). As a part of meeting this call, SLPs are tasked with using culturally responsive materials, including the use of books that are representative of a wide variety of identities across race, ethnicity, gender, religion and ability (Harris; Owen Van Horn, 2020). Research investigating gender representation within children's books has overwhelmingly found the presence of under representation of women along with pervasive gender stereotypes. The purpose of this research is to analyze the quality of gender representation within children's literature at a university clinic. The research question the study aimed to answer was, "what roles do female and male characters assume in books found within the children's literature at a Midwestern University SLP Clinic, and how do these roles relate to traditional gender stereotypes?"To complete this research project, an annotated bibliography was completed to gain adequate background knowledge. Next, a checklist for analyzing gender representation was formed to code books and pilot data was collected. A random sample of 262 books within the library have been analyzed. It was found that the presence of male main characters was higher than female main characters within narrative and expository books. Another finding was that non-human characters are more common in children's books and have male over representation at a much greater rate than books with human characters. As a next step in this study, the authors of this study will further review the 262 books that have been analyzed thus far and conduct a qualitative analysis of the stereotypes and gender roles. Findings will inform practices for evaluating clinical materials to ensure quality representation of gender within materials used for assessment and intervention services.

Chang, Yunwoo

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Computer Science/Information Systems

Author/Contributors:
Yunwoo Chang,
Frederick Wang,
Lu Wang

Abstract Name: Natural Language Processing for Understanding Persuasive Arguments

The conventional Stance Detection technique for media analysis focuses on the sentiment of the target entity, which often overlooks the source entity giving the sentiment. However, this presents limitations as media sentiments are often implicitly expressed by determining who to report and about what relationships among co-partisans to portray rather than just a face-value assessment of the target entity's sentiment. Instead, our research presents a novel model leveraging techniques from the Event Extraction area to understand media narratives better through the lens of moral events identification and moral value classification. To perform this task, we analyze a set of 10,619 events collected from news articles of various ideological leanings using a comprehensive framework. The events are scrutinized in a triplet-style annotation consisting of an agent, a patient, and a moral event classified according to Jonathan Haidt's Moral Principle Theory. Furthermore, we enhance the model with a graph encoder to summarize entity activities and external knowledge surrounding the entities. Experiments show that our Moral Event Extraction model produces a more precise analysis of moral events and embodied moral values. Our goal is to develop a more robust system that can achieve state-of-the-art performance. We have been investigating the underlying moral foundations embodied by moral events. This will help us better understand the news narratives and answer important questions about what gives rise to ideologies and stances held by media outlets. Moreover, the outcome of this project will assist social scientists to study how disparate media sway targeted audiences differently

Changalvala, Chandu

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Public Health

Author/Contributors:
Madison Lanai,
David Buckner,
Kennedy Carpenter

Abstract Name: **Designing A Metastatic Breast Cancer Support Program**

Currently, there is a significant lack of community-based support groups for individuals living with Metastatic Breast Cancer (MBC). The majority of breast cancer support groups exist for those who are breast cancer survivors, inadvertently overlooking those given a terminal diagnosis. Additionally, only about 2% to 5% of the funds raised for breast cancer research is spent towards breast cancer metastasis studies. The goal of our research is to create a patient-led, community-based support program for individuals living with MBC. This will require the collection of resources that address the specific needs of this community, which were identified through extensive literary research and comprehensive surveys. The survey we created assessed their backgrounds, capabilities, needs, and desires. Additionally, we conducted 15 one-on-one interviews with MBC individuals to gather information on their past support program experiences and program structural preferences.With this qualitative and quantitative data, we are currently developing the Charlotte MBC Program and plan on officially implementing the program in the spring of 2023. We have partnered with Carolina Breast Friends, a Charlotte-based nonprofit organization centered around providing support and resources to those who are affected by breast cancer. Carolina Breast Friends does not currently have any specialized services for those with metastatic breast cancer and partnering with this organization allows them to impact more lives within the breast cancer community. We plan on housing our program at their Pink House, a unique respite center for breast cancer survivors.

Chao, Chelsea Chi-Yun

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Rosslyn Scott *Chelsea Chi-Yun Chao* *Young Ji Lee,*
Yu Chi *Heidi Ann Scharf Donovan* *Vivian Chi Ching Hui,*
Zhimeng Luo *Zhendong Wang*

Abstract Name: **Identifying most common concerns of ovarian cancer caregivers reported in online health communities (OHCs)**

Online health communities (OHCs) have been a channel for both cancer patients and caregivers to seek and share informational and emotional support. Leveraging this resource would help researchers and clinicians to identify concerns of patients and caregivers, which may guide future education materials; however, caregiver aspects have been understudied. Thus, this study aims to identify concerns among caregivers of cancer patients through analysis of OHCs. As the first step, we focused on caregivers of ovarian cancer (OvCa), the deadliest gynecologic cancer. Methods: We crawled data from the OHC managed by the National Ovarian Cancer Coalition (NOCC), and de-identified data by replacing it with random numbers . We manually classified whether a post was written by an OvCa patient or caregiver, only selected postings from caregivers. Thefirst coder (RS), a nursing undergraduate student, performed inductive content analysis by identifying keywords and phrases that had similar concepts. The second coder (CC) went through the same process and confirmed the themes. Any discrepancies between two coders were resolved through meetings with a faculty-level researcher (YL). Results: In total, 909 postings were crawled, and only 10 postings were written by caregivers. Eight postings specified their relationships to the patient (1 sister-in-law, 5 daughters, and 2 husbands). The remaining 2 postings did not specify their relationship to patients. We identified three themes: 1) emotional distress of the caregiver, 2) need of medical information for the caregiver, and 3) need of providing emotional support for patients. Discussions: We found that few caregivers used the OHCs regardless of the significance. Further studies may examine the barriers among caregivers in utilizing OHCs. Also, different types of caregivers may have different needs, thus, this relationship needs to be studied further. Our results can support healthcare providers in developing educational resources for OvCa caregivers.

Chapel, Tori

Institution: *VA - Virginia Commonwealth University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tori Chapel

Abstract Name: **Antipaluria urichi and Oecophylla smaragdina as Potential Candidates for Sericulture**

The domestic silk moth, Bombyx mori, is the most highly studied and most widely used organism in sericulture, the industry of silk production. In 2020, the Gross Production Value of silkworm cocoons suitable for reeling was 3,590,971,000 current United States Dollars. This study was conducted to determine if supplementing the silk industry with the silks of the webspinner Antipaluria urichi and the Asian weaver ant Oecophylla smaragdina would be economically viable. A literature review was conducted to consolidate information on Bombyx mori sericulture and the behavior and care of Antipaluria urichi and Oecophylla smaragdina. Antipaluria urichi of all life stages can live in the same enclosures under the same conditions, requiring fewer resources than Bombyx mori, which need different living conditions in the egg, larval, and pupal stages. As Antipaluria urichi feed off of lichens and lettuce, their food can be easily obtained year round, unlike the mulberry leaves that Bombyx mori feed on. One Antipaluria urichi specimen can produce the same order of magnitude of silk length in one day as one Bombyx mori can produce over its 6-8 week lifespan. However, the smaller diameter of Antipaluria urichi silk (100 nm versus 8200 nm) means that Antipaluria urichi produces a much lower volume of silk than a Bombyx mori silkworm. If the collection of Oecophylla smaragdina brood as a food source and the use of Oecophylla smaragdina as a natural pest control agent were combined with the harvesting Oecophylla smaragdina silk, the cost of providing habitation and sustenance for the ants would be minimal since the ants utilized in those industries live outdoors and forage for their own food. A lack of research on the amount of silk used in Oecophylla smaragdina nests prevents estimation of the potential yields of weaver ant silk farming.

Chapman, Caleb

Institution: *MN - Minnesota State University - Mankato*

Discipline: Psychology/Neuroscience

Author/Contributors:
Halley Weinberger *Finley Sims* *Caleb Chapman*

Abstract Name: **Creating a Pseudoscience Scale: Identifying Gaps in Critical Thinking in Acceptance of Pseudoscience Topics**

Pseudoscience pervades discourse across the world. Acceptance and consideration of pseudoscience was especially highlighted during the COVID-19 pandemic, demonstrating the threat of pseudoscientific beliefs to public health and the prevention of disease. Teovanović et al. (2020) conducted a study that revealed those who were less likely to participate in guidelines such as hand washing or physical distancing were more likely to believe in pseudoscience practices. Additionally, a study by Desta and Mulugeta (2020) revealed that the spread of pseudoscientific beliefs related to COVID-19 had a negative effect on the containment of COVID-19. Across the world, researchers recognize the importance of understanding the origins of pseudoscientific beliefs. García-Arch et al. (2022) created a validated psychometric tool to measure a range of pseudoscientific beliefs, though this scale was developed and validated in Spain. Our goal is to create a pseudoscience scale focused on specific medical beliefs within a United States sample. This is particularly important as pseudoscience beliefs can vary significantly across cultures. We aim to investigate how pseudoscientific beliefs about health and medicine in the United States correlate with intelligence and critical thinking. We created a survey which was distributed electronically to college students, with a goal of obtaining at least 100 responses across different school levels and other demographic characteristics. We began data collection in fall 2022 and plan to continue throughout winter and spring of 2023. This study will contribute to knowledge about what gaps in logic or critical thinking contribute to acceptance and belief in pseudoscience. We hypothesize that individuals with lower levels of critical thinking and intelligence will indicate higher agreement with pseudoscientific ideas. The analysis will aid us in more effectively targeting people with pseudoscientific beliefs in an effort to reduce the acceptance of pseudoscience.

Chapman, Spencer

Institution: *TX - Trinity University*

Discipline: Mathematics

Author/Contributors:
Ryan Daileda,
Spencer Chapman

Abstract Name: **An application of a generalization of Artin's primitive root conjecture in the theory of monoid rings**

The notion of "factorization" extends far beyond the familiar realm of integers and polynomials. While efforts in Number Theory have shown that prime factorization is guaranteed in not only the domain of integers, but in lots of other structures, the computation of such factorization is highly nontrivial. This paper opens with a result from on the irreducibility of binomials over zero-characteristic polynomial rings, and will cover the consequences of allowing finite fields and restrictions to exponents. The results from such work include a classification of primes satisfying the factorization criteria, as well as a computer-assisted approach on generating such primes, and an investigation of their theoretical density under Artin's primitive root conjecture.

Chapman, Sydney

Institution: *KY - University of Kentucky*

Discipline: Computer Science/Information Systems

Author/Contributors:
Sydney Chapman,
Bruno Athie Teruel

Abstract Name: **Virtual reconstruction of 2000-year-old Herculaneum Scrolls**

The city of Herculaneum was buried by mount Vesuvius in 79 A.D. alongside Pompeii. Because of the way the city was buried by the pyroclastic flow, organic material was better preserved than in Pompeii and notably thousands of carbonized scrolls were found inthe famous library at the Villa dei Papiri. Most of these scrolls are damaged beyond recongnition and are too fragile to be read by traditional methods. Our research aims to improve and build upon methods to digitally study these scrolls without inflictingfurther damage on the artifacts. For the scrolls that were opened in the 1800s and now find themselves mostly broken into multiple fragments called 'Pezzi', multispectral photographs were taken by our team in Naples, England, and Paris. We have improved the process of image registration and blending for these multispectral images. As for the scrolls that remain closed, the Herculaneum project aims to CT Scan them and apply our virtal unwrapping pipeline to virtually unroll these scrolls, in a process similar to the virtual unrolling of the En Gedi scroll lead by Dr. Seales in 2015. The complexity of the Herculaneum scrolls, however, requires a new approach in segmentation and ink identification. We have developed a new tool to carry out preliminary segmentations of the scrolls and tested our algorithm. The research prospectus includes the application of the machine learning algorithm for carbon ink identification developed by Parkeret al. 2019 to our newly obtained segmented fragments in order to reveal the content of the two-thousand-year-old scrolls.

Chapman, Zachary

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Zachary Chapman

Abstract Name: Men's Mental Health on College Campuses

Men's mental health is a topic that has seen an increase in attention recently, primarily due to a growing focus on societal roles and expectations surrounding gender. The subject of toxic masculinity – how it can be reinforced by society and the very men it effects, how its outcomes reinforce the behaviors it creates, and how it negatively impacts the mental health of men at every level – is an especially important topic due to how toxic masculinity affects men's relationship with their mental health. I thus explore the relationships between men and their mental health on college campuses specifically, by asking: "Are men suffering from mental health on college campuses currently undergoing a crisis?" and "Is the subject of men's mental health currently going unacknowledged?" Through mixed methods research involving a survey (N = 253) of UW-Stout students and individual interviews, trends were found regarding views on men's mental health. Participants largely agreed that the subject does not receive the attention that it needs or deserves, and that there are several issues regarding how society treats it. Students almost universally answered that they view men who suffer from mental health as stronger, but that they believe the public would do the opposite; that men are encouraged to internalize their struggles; and that progress needs to be made to combat toxic masculine gender roles. This project provides insight on societal views about toxic masculinity and men's mental health, an extremely important topic to better understand to shift and improve traditional gender roles and expectations that cause harm to men.

Chapple, Brooke

Institution: ***VA - Liberty University***

Discipline: Biology

Author/Contributors:
Abigail Piddock,
Caroline Wethington,
Brooke Chapple ,
Kyra Goyette,
Nyle Shank,
Hannah Wilson,
Josiah Harris,
Gibson Huff

Abstract Name: Effects of seasonality on the infection intensity of the amphibian skin pathogen Batrachochytrium dendrobatidis on crayfish

Batrachochytriumdendrobatidis(Bd) continues to be a major contributor to global amphibian declines and lowers the quality of life of manyother creatures. Bd is a chytrid fungus that causes mortality of many amphibians and is known to damage the gills of crayfish. As potential carriers of Bd, crayfish are likely a major source of moving Bd from one aquatic habitat to another. Such aquatic environments are essential for amphibian life history patterns. One way to test the overall health ofan aquatic environmentregardingBd is to measure Bd levels in potential carriers. Since the crayfish carapace is constantly interactingwith the external environment, it is a convenient location to take these measurements. However, periodic molting can impactthese levels and skew the results. A more reliable indication of Bd prevalence and intensity in the crayfish population can befound by measuring the Bd levels in the GI tract, as it is known to embed here as well.This project investigates the seasonal Bd infection prevalence on a local crayfish populationby collecting DNA with swabs(carapace and GI tract)and by confirming infection intensity with pathogen specific real-time PCR (qPCR).

Charest, Olivier

Institution: *WI - University of Wisconsin-Stout*

Discipline: Biology

Author/Contributors:
Olivier Charest

Abstract Name: **AI-mediated structure prediction reveals patterns in prion misfolding**

The precise function of soluble prion protein (PrPc) remains unknown. PrPc has been found to misfold and form a pathogenic isoform PrPSc that includes significant beta-sheet content. This same pathogenic isoform has been linked to many diseases like dementia, Familial Fatal Insomnia and Creutzfeldt-Jakob disease. To date, NMR or crystal structures have emphasized a well-structed core region spanning residues cystine 179 to cystine 214. Notably, many mutations that confer disease impact this region of the prion protein, especially the polypeptide segment containing residues 187-194, comprising the prion protein C-terminal globular region. The purpose of my research was to find patterns that influence the formation of pathogen β-sheets in prion protein. I focused on understanding how the substitution of aliphatic amino acid valine (V) at position 210 to different amino acids perturbs the folding of prion protein globular regions by examining known NMR and crystal structures of prion proteins.The predictions obtained by substituting amino acid V210 to other amino acid with different properties ended up affecting segment 187-194 that ended up forming β-sheets for certain substitutions. Those results when compared to NMR and crystal structures led us to believe theresults could potentially be classified as pathogenic prion protein structures. This will need further research to which we are working on.

Chase, Dalton

Institution: *OK - Cameron University*

Discipline: Physics/Astronomy

Author/Contributors:
Dalton Chase,
Susmita Hazra,
Wyatt Main

Abstract Name: **Solar Cycle Variability and its effect of Geomagnetic Activity**

Variation of Sun's magnetic field and its activities are governed by an 11-year cycle, called the solar cycle. Solar cycle influences the activity on the surface of the Sun, resulting in sunspots which are caused by the Sun's magnetic fields stretching and becoming intertwined.The highly active Sun during solar maxima emits higher volume of radiation, higher energetic charge particles with magnetic flux and thus create hazardous space weather and can affect Earth’s atmosphere too. In this research, we are presenting the variability of solar activity in solar cycles 23,24 and its influence on geomagnetic activities. We have studied sunspot numbers, F10.7 flux, solar wind speed, and Coronal Mass Ejection (CME).For solar activity, we are using GOES, ACE satellite data. For geomagnetic activities we are usingKp,DsTindex data. We are categorizing the geomagnetic activity data for low latitude (0-250), mid latitude (250-500), and high latitude (>500).Understandingsolar activity and its effects onspace weather and Earth’s atmosphere is highly important.Thisworkwillbehelpfulin buildingaframework foranempiricalmodel for future solar activity prediction.

Chaudhary, Amit

Institution: ***IL - Northern Illinois University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Amit Chaudhary

Abstract Name: Building a 1/16th scale autonomous car incorporating 3D LIDAR technology

Much research on automated vehicles has been carried out since Tesla developed the Autopilot feature on its cars. These Tesla cars use old-fashioned cameras and visualization methods, using machine learning to create the Autopilot feature. Despite the significant amount of research published on these systems, minimal research has been conducted on autonomous vehicles using the 3D Lidar SLAM (Simultaneous Localization and Mapping) technique. Hence, this study aims to investigate the accuracy and efficiency of the 3D Lidar technology on autonomous scaled cars. The study is carried out on the ROS (Robot Operating system) platform using a multi-step process. First, the vehicle is tested on the simulation environment of ROS, called the Gazebo environment, by developing a simulated map of the environment. Next, the car is tested in a natural environment by using 3D Lidar to scan the environment. This information is then used to create a map and implement SLAM by a path planning algorithm called "follow the gap" and "wall following." The benefits of building a 1/16th scaled autonomous vehicle include cost-efficient tests and the ability to be tested anywhere without harming anyone. Furthermore, these algorithms can be tested on life-sized cars to create an autonomous vehicle by considering more advanced algorithms like Traffic-Aware Cruise control, auto lane change, etc. Ultimately, this project can potentially make significant positive steps toward ensuring the safety of drivers and passengers alike.Keywords: Scaled autonomous vehicle, 3D Lidar, ROS, SLAM, Path planning algorithm, cost-efficient, safety.

Chavez-Mayoral, Alejandro

Institution: ***NJ - Kean University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Alejandro Chavez-Mayoral

Abstract Name: Camera-Based Vital Sign Detection for Telehealth

Although telehealth costs prove to be expensive, there is an alternative when it comes to measuring vitals that can help telehealth be more cost-efficient. The alternative consists of collecting photoplethysmography (PPG) signals using a method called remote photoplethysmography (rPPG). From these signals, the objective of measuring vitals using a form that does not require any costly physical devices other than a camera is possible. From these PPG signals, a heart rate is measured by taking the maximum power density in the filtered signals and is then multiplied by 60. A rPPG model programmed in Python is tested by inputting a data set of diverse human faces and retrieving the accuracy values which are measured in beats per minute. The root mean square error (RSME) is taken and compared to other models. The data is further broken down to show that the darker the skin color is, the harder it is for the program to extract accurate PPG signals.Despite having an accuracy of ~8 beats per minute (BPM), the model tested lacked robust motion tracking and region of interest (ROI) reduction. The model can be improved by adding in landmarks on the ROI to keep the skin pixels tracked and reduce false movements. ROI reduction can help in keeping the algorithm centered on the important features on the face where PPG signals can best be extracted (the forehead and the cheeks). From the PPG signals, it is also possible to get oxygenation and blood volumes. Despite telehealth's massive success in terms of approval, the addition of remote vital measurement methods can significantly improve the ability to mimic hands-on processes and can help make telehealth more accessible to people with lower incomes or no health insurance.

Cheah, Herman

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Herman Cheah,
Lauren Brantner

Abstract Name: Asynchronous Discussion Boards Through Text or Video: Does the Modality Affect a Student's Involvement and Interaction in a Course?

Asynchronous discussion forums in both online and face-to-face courses provide an opportunity for interaction, collaborative problem-solving and hold potential for increased content mastery. While traditionally, these discussion forums occur via text-based postings, there has been an increase in technology and course design that allows for video-based discussions. For instance, a previous study concluded that students believed the asynchronous video discussion to have improved their social presence with their peers in the course. This study compares text-based vs. asynchronous video-based discussion forums within an anatomy and physiology of speech and hearing course, to better understand their respective values in supporting content understanding, connections, and relationships. Half of the class will complete discussions on each unit through text-based discussion only, while the other half will discuss through video postings. The groups will rotate the modality of discussion in every unit. In the video modality, the students will be replying to their group members' video posts with an additional video, without a limit on the number of replies. The same will apply to those assigned the text modality for that week, where the posts and replies will be in text form alone.Student submissions via each modality will be evaluated for their accuracy in addressing outcomes, their social presence and contributions in the group, and their perceptions of the design of the task. This is based on the Community of Inquiry (CoI) framework which analyzes the social, teaching, and cognitive presence involved in creating a purposeful educational experience. At the end of the experience, students will complete a survey outlined by the CoI framework to share their feedback and impressions of both modalities.

Chebesi, Daphne

Institution: ***GHA - Ashesi University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Daphne Chebesi

Abstract Name: Examining Challenges Facing Women Pursuing Doctorate Degrees in Ghana

While women's participation in education in Ghana has improved significantly over the past years, data suggests that women are still missing at higher levels of education, especially at the doctorate level. The challenges of doctorate studies for women have been linked to societal expectations of a woman. This study examined gender-specific differences in the key identity transition to a scholarly identity for men and women pursuing PhDs in Ghana to help identify challenges specific to women. Grounded on the social identity theory and using the phenomenological hermeneutic approach to qualitative research with semi-structured interviews as a data collection tool, this study captured the experiences of 6 male and 6 female students at the University of Ghana. Data was analysed thematically. Themes were identified considering pre-existing themes in the literature and new themes that emerged. The results revealed that women in Ghana navigate greater complexity than men while on their PhD journeys and face greater challenges because of their gender identity. Men, on the other hand, do not have to navigate the same complexity and do not face as many challenges as women. Stakeholders need to pay attention to the individual contexts of PhD students, especially women to encourage more women in Ghana to enrol in and complete their doctorate studies. This study contributes to the existing literature on gender in education by uniquely explaining how a social construct like gender identity impacts women's socialization into academia differently from men, particularly at the doctoral level. It also offers a gender comparative perspective that similar studies have failed to do. This paper tackles issues related to educational inequity at the doctorate level, which has implications for policymaking in higher education and development in Ghana. It also contributes to SDG 4: Quality Education, SDG 10: Reduced Inequalities and SDG 5: Gender Equality.

Chebet, Sharleen

Institution: *CAN - Carleton University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Sharleen Chebet

Abstract Name: **Mind Library**

As part of the ICUREUS program here at Carleton , I am working with Dr Jim Davies to create software using Open AI's GPT-3 to create an interactive AI. The algorithm is the most powerful language model, creating human-like text. Our project would have users' past inputs to create useful information that could be used in the present. For example, if the user wrote a book ten years ago , the software would create insight from past input (the book) and generate information that would be useful in working on a present project. We were drawn to GPT-3 due to its use in diverse ways dealing with grief to writing articles .GPT-3 has impressive language capabilities, like its ability to create interactive human like conversation .Our software's goal is to maximize efficiency by alleviating the user from tedious amounts of cross reference on information they already know but just lost track of, like a mind library. It would be like talking to a 2015 version of yourself, how cool is that? Ideally, this project would result in an open-source piece of software that anyone would be able to apply to their own writing. Key performance indicators are ofcourse desired outputs from the model and accuracy .We expect to use huge amounts of unstructured data to test our programs . Working with AI we would need to to design and create the software and work within Google's People+Ai guidebook.To make our software user friendly.

Chen, Donald

Institution: *WI - Marquette University*

Discipline: **Biology**

Author/Contributors:
Donald Chen,
Nicholas Sepulveda,
Lisa Petrella

Abstract Name: **Exploring Neuronal Structures of Male C. elegans at Elevated Temperatures**

Across many organisms, including the nematodeCaenorhabditis elegans,as temperature fertility decreases. We have found that in maleC. elegans, the main effect of increased temperature on fertility is in changes to their mating behavior. When stressed at higher temperatures, we have shown that maleC. elegans were less likely to find a mate and that they prioritize food over mating. We predict that there may be changes to their neuronal structures or signaling leading to these behavioral changes. To further understand this, I imaged CEM neurons in the male head and the RnB neurons in the male tale to determine if there were changes to neuronal number or architecture in temperature stressed males. Both neuron types are involved in male mating behaviors. Neurons were imaged in three different C. eleganswild type backgrounds: JU1171, LKC34, and N2. I predicted that when comparing temperature stressed males to unstressed males, temperature stress will cause the neurons to change shape, such as shortening or elongating. I found that there were increased defects in the RnB neurons at elevated temperatures in all three strains, but none in the CEM neurons. However,the CEM neurons in LKC34 showed an increase in length. Lastly, for the RnB neurons, in JU1171, neurons in rays 4, 5, and 7 showed an increase in length at higher temperature; whereas forLKC34,there were increases in neurons in rays 2, 3, 4, 5, and 8; and in N2, there was only a significant difference in ray 7. Therefore, we can confirm that at high temperatures, there are an increased number of defects, but that the change in behavior is not necessarily attributed to the CEM or RnB neurons.

Chen, Erica

Institution: *PA - Lafayette College*

Discipline: Biology

Author/Contributors:
Erica Chen,
Eric Ho

Abstract Name: **In-Silico Study of Antisense Oligonucleotide Antibiotics: Porphyromonas gingivalis and Beyond**

Background: The rapid emergence of antibiotic-resistant bacteria directly contributes to a wave of untreatable infections. Most antibiotics today are small molecular compounds that block vital processes in bacteria, ultimately hampering growth. To achieve such effects, the 3-dimensional structure of the targeted bacterial protein must be resolved through purification, followed by X-ray crystallography or NMR. However, such a task is time-consuming and tedious. Thus, improvement in antibiotic development is imperative. Recently, a promising therapeutic technology has emerged that acts directly on mRNAs, the precursor of proteins, causing their degradation. Doing so means there is no need to determine protein structure as the sequence is readily available. This class of therapeutic technology is called antisense oligonucleotides (ASO). ASO is a short (19-20 nucleotides long) single-stranded sequence composed of modified DNAs and is a complement to the target mRNA. Upon hybridization, it will either trigger endonuclease-dependent degradation or exert steric hindrance to protein translation. This study aims to design a bioinformatic pipeline to identify unique 20-base pair (20mer) ASOs that target essential bacterial proteins. Furthermore, potential ASOs will be ranked by RNA secondary structure, RNA binding protein, phylogenetic conservation, and GC content. Results: We obtained the gene sequences of 66 bacteria from the Database of Essential Genes. The number of essential genes per bacteria ranged between 105 and 1265. Using RStudio Cloud, we developed a program to break down genes into overlapping 20mers, which were saved in a FASTA format. Discussion: To prevent off-target effects, we intend to use BLASTN to identify unique 20mers and rank them per the parameters above. By working towards a pipeline to identify unique and significant 20mers, we are one step closer to developing novel ASO antibiotics.

Chen, Jiaxin

Institution: *NY - Colgate University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jiaxin Chen *Riley Decker* *Lucy Khaner*
Lauren Philbrook

Abstract Name: **Loneliness and Adjustment in Young Adults: Respiratory Sinus Arrhythmia and Sleep Disturbances as Moderators**

Loneliness is a pervasive concern among young adults (Victor; Yang, 2012) that is negatively associated with mental and physical health (Peltzer; Pengpid, 2017). The present study examined the role of two bioregulatory factors, parasympathetic nervous system functioning and quality of sleep, in mitigating the detrimental impact of loneliness on young adults' mental health symptoms and well-being. Participants were 188 (71.8% women; 77.1% White) undergraduates at a liberal arts college in a rural U.S. community. Parasympathetic activity, indexed via respiratory sinus arrhythmia (RSA), was measured from electrocardiogram and thoracic impedance data collected during a 3-minute resting baseline period. Young adults self-reported loneliness, sleep disturbances, anxiety and depressive symptoms, and well-being using well-validated measures. Regression analyses revealed that higher loneliness was associated with higher anxiety and depressive symptoms and lower well-being. However, there was also a robust and consistent pattern of three-way interactions, such that the combination of high baseline RSA and low sleep disturbances protected young adults from elevated anxiety and depressive symptoms and lower well-being in the context of high levels of loneliness. These results provide the first evidence that high baseline RSA and low sleep disturbances together attenuate the association between heightened loneliness and maladjustment, which could inform strategies for coping with loneliness among young adults. Interventions that incorporate elements of both sleep education and deep breathing exercises, which may increase parasympathetic activity (e.g., Obradović et al., 2021), could be particularly valuable for protecting young adult mental health and well-being against interpersonal stressors such as loneliness.

Cheney, Oriana

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Music

Author/Contributors:
Oriana Cheney

Abstract Name: Women Composers of Modern Flute Music

Katherine Hoover, Libby Larsen, and Lisa Bost-Sandberg are three excellent examples of women composing flute music in this modern age of music. Their music outlines some of the best solo flute compositions from recent times, using extended technique and unique sounds and timbres. Three compositions stand out for their excellence in all of the above areas when it comes to these composers; these are Katherine Hoover's Kokopeli, Libby Larsen's Aubade, and Lisa Bost-Sandberg's Diandya.
Kokopeli, by Hoover, is about the Kokopeli of Hopi legend, who was a great "mahu," or hero, and also a flutist. His sounds are said to have echoed through the great canyons and cliffs of the Southwest throughout his travels. Hoover captures these ideas through echoing lines and distinct melodies. Aubade, by Larsen, captures the idea of the morning light and greeting the dawn through its free melodies and vibrant nature. The word itself means morning music, which is music played to welcome in the dawn. The piece contains extended technique through the use of wide vibrato and flutter tongue. Diandya, by Bost, is a piece that pushes the boundaries and limits of the flute. It has many extended techniques, such as pitch bends, harmonics, glissandi, improvisation, and altered pitches. Performers are challenged as they work through this gorgeous piece.
Performing pieces by women composers is really important, since works by men have dominated the field of music for a long time. It's also important to play pieces by living composers, which includes Aubade and Diandya, since many performed works are works from people who have been gone for centuries. Performing works by living composers allows us to have a direct link to the composer.
Kokopeli, as performed by Oriana Cheney on 12/13/21

Cheng, Yi Jian

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Md Rakibul Islam,
Yi Jian Cheng

Abstract Name: Data Augmentation for Improving Sentiment Analysis in Software Engineering

Natural language processing (NLP) is an essential key component in the subfield of artificial intelligence for human language analysis. It is utilized by numerous deep-learning models to perform tasks such as sentiment analysis, machine translation, and information retrieval. However, such models continually face limitations of performance accuracy when applied to a domain specific corpus, such as Software Engineering. As the amount of data accessible online is scarce, we propose a strategy to improve the accuracy and efficiency of NLP tasks by performing data augmentation in the transfer learning phase. Thus, in this study, we quantitively evaluate the performances of six versions of text-generating tools by optimizing them for sentiment analysis in Software Engineering domain. Our qualitative evaluation will advance our understanding in devising strategies to improve accuracies of domain specific NLP tasks

Chery, Christa

Institution: *AL - Samford University*

Discipline: **Biology**

Author/Contributors:
Heaven Colquiett,
Christa Chery

Abstract Name: **Parental Criticism and Willingness to Intermarry**

Willingness to marry someone of a different race is influenced by racial climate. How parents respond will impact how they present preferences for partnering to their children. Research suggests a relationship between race, gender, partner preferences, and parental criticism in partnering. This study examined the impact of race relations on marriage preferences and the role parents have in willingness to intermarry. Participants (n=207) completed a survey containing the Family Emotional Involvement and Criticism Scale I and the Personal/Global grid survey, which measures willingness to partner with someone outside of their race. First, we hypothesized that parental criticism would correlate with the likelihood that participants would partner with someone outside of their race. Data revealed no relationship between criticism and willingness to intermarry for men, but for women this relationship was significant (r=.166, p=.040). The second hypothesis was that race and gender impact partnering with someone outside their race. No differences were found. Findings can inform family therapists and educators individuals willingness to partner with people outside of their race.

Chew, Xuan Fey

Institution: *OK - University of Central Oklahoma*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Madison Geary,
Xuan Fey Chew,
Omar Lopez Hernandez,
Yuhao Jiang,
Gang Xu

Abstract Name: **Charactering Biohybrid Microswimmers as A Potential Targeted Drug Delivery System**

Guided drug delivery has evolved in recent years to allow for more effective treatment of diseases such as cancer. Cancer is often treated with intravenous chemotherapy which often involves a myriad of unwanted side-effects. In order to achieve reduced side effects and increased treatment efficacy, an innovative method would be desirable if it allows delivery of therapeutics to targeted regions instead of the body being infused with the medication. Chlamydomonas reinhardtii, biflagellate unicellular green algaes with strong positive phototaxis, may serve as a promising guided drug delivery system. The goal of this project is to utilize the phototactic properties of the algal cells that are loaded with therapeutic microspheres as cargos and direct these biohybrid microswimmers with a focused light source. We have developed effective procedures to bind microspheres to algal cell bodies. A large number of cells under various loaded or lighted conditions were recorded under a light microscopy. Their moving trajectories and velocities were tracked frame by frame using a particle image velocimetry (PIV) software. Our preliminary results showed that these algal microswimmers moved at relatively more consistent directionality towards the guided light source, compared with random moving orientation without the guided light. This study will pave the way for further characterization of the novel biohybrid microswimmers as a potential targeted drug delivery system.

China, Jessica

Institution: *PA - Messiah University*

Discipline: Social Work

Author/Contributors:
Jessica China

Abstract Name: **Researching a Model for Community Revitalization in Urban Environments**

Over the past century, there has been an increased interest in revitalizing urban environments and communities. Revitalization is defined as the act of "giv[ing] new life or vigor to [something]" (Merriam-Webster, n.d.). Because of the lack of specificity of the above mentioned definition, individuals, groups, and organizations who have researched or undertaken a project related to revitalization have interpreted the end goal of urban revitalization differently. As a result, some initiatives have focused on the goal of stimulating the economy through tourism; others have sought to make cities more environmentally sustainable; still others have aimed to uplift communities out of poverty. For the purpose of this study, the primary emphasis of urban revitalization will be the alleviation of poverty and increasing opportunity among disadvantaged communities. The student will conduct secondary data analysis to explore the issue of urban poverty, consider the proposed Mondawmin model in Baltimore, Maryland, and examine the applicability of the model to other urban areas. Ultimately the primary objective of this research project is to investigate a collaborative, non-governmental approach to revitalizing impoverished urban communities, focusing on unifying the private sector, churches, non-profit agencies, and social workers.

Chiou, Victoria

Institution: *UT - University of Utah*

Discipline: Biology

Author/Contributors:
Victoria Chiou *Brian Krum* *Noah Huerta* *Anna Beaudin*

Abstract Name: **Fetal hematopoietic stem cell metabolism in response to varying prenatal folate status**

Folate-mediated one carbon metabolism is essential for de novo nucleotide synthesis, cellular methylation, regulation of mitochondrial metabolism. These processes are critical to the maintenance and development of hematopoietic stem cells (HSCs). HSCs are generated during fetal development and are responsible for generation of all blood cells across the lifespan. Universal folic acid supplementation of the population is currently utilized for the prevention of common birth defects, but there are currently no known studies on the influence of prenatal folic acid supplementation on the development of HSCs. To examine the effects of prenatal folic acid supplementation on HSC function, wild type C57BL/6 female mice were weaned onto one of three diets, 0mg/kg (folate deficient, FD), 2mg/kg (folate control, FC), or 8mg/kg (folate supplemented, FS), and mice were timed mated to generate litters under each condition. Both FD and FS significantly decreased fetal weights at embryonic day (E)14.5 as compared to FC offspring. Despite growth restriction, profiling of the developing hematopoietic compartment using flow cytometry at E14.5 revealed overall expansion of all blood cells in response to FD as compared to FC offspring, whereas all blood cells were significantly reduced in FS offspring. Increased blood cells in FD offspring were driven by expansion of HSCs and all downstream progenitor and mature cells. In contrast, FS caused decreased mature myeloid and lymphoid cells at E14.5, whereas hematopoietic stem and progenitor cells (HSPCs) were unaffected. To determine the underlying mechanisms of varying prenatal folate on hematopoietic output, we metabolically profiled E14.5 HSPCs to determine OXPHOS (oxidative phosphorylation) and glycolytic activity. Preliminary results show that FS offspring exhibited higher rates of glycolytic activity as compared to FC offspring. Additionally, FS offspring had higher OXPHOS activity per cell as compared to FC offspring. These data reveal that prenatal folate alters HSPC metabolism during fetal life.

Chirvasa, Cristina

Institution: *UT - Utah State University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Cristina Chirvasa,
Andrew Kulmatiski,
Martin Holdrege,
Karen Beard

Abstract Name: **Understanding how changes in precipitation intensity will affect vegetation in the western U.S.**

Precipitation events are becoming more intense as the atmosphere warms, but it remains unclear how precipitation intensification will affect plant growth in arid and semiarid ecosystems. There is conflicting evidence suggesting that larger precipitation events may either increase or decrease plant growth. Here, we report the growth responses of herbaceous and woody plants to experimental manipulations of precipitation intensity in a cold, semi-arid ecosystem in Utah, USA. In this experiment, precipitation was collected and redeposited as fewer, larger events with total annual precipitation kept constant across treatments. Results from the first two growing seasons revealed that more intense events 'pushed' water deeper into the soil, leading to an increase in woody plant growth. To provide a longer-term and more mechanistic understanding of this response, here we will be analyzing an additional two years of shrub stem radius growth, soil water content, new root growth, root area, and herbaceous plant growth. Additionally, we performed a depth-controlled water tracer experiment to describe grass, forb, and shrub rooting distributions in different treatments. Results have implications for understanding the increase in woody plant abundance around the world in the past 50 years, a phenomenon known as shrub encroachment, and for forecasting semi-arid ecosystem responses to climate change.

Chittick, Caden

Institution: *IA - Iowa State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Caden Chittick,
Boyce Chang

Abstract Name: **Measuring the Flory-Huggins Interaction Parameter, Chi, of the PS-P4VP Supramolecular System**

The Flory-Huggins interaction parameter () is an important tool in determining the solubility of a polymer in a solvent. In most polymers, the parameter is measured by comparing it with a wide range of solvents with varying interaction parameters. Then, the interaction parameter of the polymer sample can be determined empirically from this data. Supramolecular polymer systems contain a side group that facilitates secondary bonding, to which molecules may bond. This property makes these materials highly tunable, adjusting what functional groups are introduced and their quantity. The subject of this experiment is the Polystyrene-b-Poly(4-vinylpyridine) block copolymer system. The pyridine side group of this system allows other molecules to hydrogen bond, modifying the arrangement of the chain. These systems have plenty of potential. Beyond their tunability, they also may have applications in nanolithography, the process of creating nano-scale patterns on a substrate. With the increasingly smaller electronic scales, the ability to create highly detailed and patterned nanostructures is highly desirable is generally unknown for supramolecular systems. Thus, empirically measuring for the system is valuable, as this helps with the processing and applications of the material. The goal of this study is to determine this parameter.

Cho, Audrey

Institution: *CA - University of California - Davis*

Discipline: Environmental Studies

Author/Contributors:
Audrey Cho

Abstract Name: **Universal Kryptonite: Funding Education and Monitoring in Dunn County, WI**

Lakes Menomin and Tainter are EPA-designated impaired waters in Dunn County, Wisconsin. One of the culprits for this impaired designation is nutrient runoff from agricultural land, a form of nonpoint source pollution that causes harmful algal blooms in the lakes that restrict recreation and can be toxic to humans and animals. Through a process of interviews, transcription, and thematic coding, this research explores the policy landscape governing nonpoint source pollution, alongside the education, monitoring, and funding challenges faced by local policy actors. Two main concerns were identified: educational gaps relating to nonpoint source programming, and a need for consistent sampling of water bodies and tracking of policy effectiveness. Stakeholders reported that agricultural producers are often unaware of the policy compliance expected of them, while non-farming community members are uneducated on how to keep excess nutrients out of the lake. Minimal staff capacity and funding for this outreach puts pressure on current employees to fulfill educational duties outside of their job descriptions or skillset. Stakeholders also reported a lack of consistent monitoring and sampling of water bodies. Without data showing other impaired waters in the area, the county may be less competitive for water quality grants. The county has also experienced difficulty monitoring landowner compliance with nonpoint source programming, thus impacting its ability to quantify where nutrient runoff is coming from. Ultimately, funding challenges underlie education and monitoring concerns and restrict local government's ability to perform necessary communication and sampling. This poster recommends that the local land and water conservation division hire two new positions, one dedicated to education and outreach and another focused on monitoring policy compliance and sampling of water bodies.

Choi, Jena

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Jena Choi

Abstract Name: **Spatial Footprint of Uranium Above Water Table**

In Riverton, Wyoming, traces of uranium are found in groundwater after being leached from the surface during flooding events near the Little Wind River. The objective of this experiment is to investigate and locate where most uranium resides in fourteen different locations and depths in order to understand how it mobilizes. Since uranium in water can cause long-term health issues when consumed, identifying the origin and how it mobilizes can help prevent uranium from entering our waters. In order to find how uranium mobilizes within soil, iodide with water was used to trace the movement of the infiltrated water. The method used to calculate the amount of iodide and uranium is called the standard deionized water extraction. In this method, deionized water is used to leach off any material or substance such as iodide from the soil. After adding deionized water with the soil, they are later stirred and centrifuged for hours, where certain particles are now in the water. The sample is later decanted and filtered for testing, where the data is graphed on a chart displaying where iodide and uranium are found within varying depths and locations of soil. The expected result is to find high levels of iodide in areas it originally seeped through with water while high levels of uranium would be found away from the location from where it first flowed due to the mobilization of groundwater. The findings will help understand more on how uranium mobilizes through soil and help better predict where uranium might be if ever leached from the sediments above the water table. The use of standard deionized water method can apply to other substances and can identify the quantity of the element.

Choi, Yiseul

Institution: *VA - Liberty University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Yiseul Choi

Abstract Name: **Impact of Autonomous Vehicles on Roundabouts at Various Penetration Rates and Automation Levels**

Technologies have been developed in response to the various traffic demands, especially the increasing traffic volume and congestion. The modern roundabout provides enhanced efficiency and safety performance of intersections with fewer traffic enforcements to drivers. Roundabouts also decrease vehicle idling by reducing stop-and-go vehicle traffic caused by traffic signals or stop signs. Despite its geometrical and operational benefits, roundabouts are less preferred than signalized intersections due to the higher complexity and increased uncertainty associated with human engagement in multi-lane roundabout operations. Autonomous Vehicle (AV) technology has been considered a solution to minimize the uncertainty of human driving behaviors. Driving assistance of AVs minimizes the driver's contribution to vehicle operation and reduces car accidents by decreasing human errors and inconsistent driving behaviors. The purpose of the study is to investigate the impact of Autonomous Vehicles on the performance of microscopic roundabout simulation models. Single- and double-lane roundabout models were developed, and roundabout priority rules were determined using a proper calibration of microsimulation parameters to evaluate the impact of AVs under different AVs penetration levels and levels of automation. The roundabout performance was investigated in terms of the intersection level of service, the average total delay, the average stop delay, the average queue length, and the maximum queue length. The results indicate that the higher AV penetration level effectively decreases the average total delay and the average stop delay in a single-lane roundabout. It was observed that AV penetration levels contributed less to reducing delay time in a double-lane roundabout. This tendency may occur due to the complexity of yielding logic and critical gap decision in a double-lane roundabout. The higher level of automation decreased the average total delay, the average stop delay, and the queue length due to its higher sensitivity to vehicle interaction and yielding logic.

Chowlur, Sahana

Institution: *CA - San Jose State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Charles Kelzer *Sahana Chowlur* *Rishit Agrawal,*
Sohail Zaidi *Vimal Visvanathan*

Abstract Name: **Characterizing an Exoskeleton Device for Leg Muscles Rehabilitation**

Stroke patients very often suffer from disability and are unable to walk freely. To regain their mobility, they need rehabilitation exercises. Commercial exoskeleton devices are availble but these are either very expensive or do not fulfil the patient's particular exercise requirements. An ongoing project at the San Jose State university is engaged in designing and developing an exoskeleton knee brace that will be cheap and will be user friendly [IMECE 2020, 2021, 2022, SCCUR-2022]. This knee brace relies on the fluidic muscles (Festo Corp) that use air pressure to mimic the leg muscles movement. The device consists of two parts, an upper brace for the front of the thigh holding the fluidic muscles and a lower brace behind the calf. The operating system includes a central control box that contains multiple solenoids and valves that are controlled by a central microprocessor (Arduino). The central system was activated by EEG sensors that were mounted on a human leg to activate the exoskeleton device. The EEG sensors' response was further processed for the noise reduction and was amplified by using an amplifier. Five fluidic muscles were characterized and calibrated before mounting them on a mannequin leg. Further experiments helped to optimize the knee brace design to mount it on a human leg. Experiments were performed to characterize the device operation by measuring the average leg rotation time and the maximum rotation angle as a function of applied pressure. Experiments show that the average time to reach the maximum rotation angle varied from 18 to 36 degrees where the rotation time varied from 1.58 to 1.23 seconds as the pressure increased from 30 to 60 psi. The presentation will detail the design and the operation of the exoskeleton device and will also describe the experimental results in a greater detail.

Christensen, Alice

Institution: ***VA - George Mason University***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Alice Christensen

Abstract Name: Understanding the LDS Indian Student Placement Program

Operated by the Church of Jesus Christ of Latter-Day Saints from the late 1940's to 2000, the Indian Student Placement Program removed indigenous childrens from their homes on reservations to live with LDS (Mormon) families and attend school for nine months out of the year. Since its conception, the program has received a great deal of criticism, both due to its ties to colonization and its effect on indigenous families. Examining the historical context of the program is difficult, as most historical accounts and data regarding the program have been published by the Church. Through an analysis of speeches and magazine articles published by the Church during this period, it is possible to reconstruct Mormon cultural attitudes regarding Indigenous people, which can then be used to critically examine LDS accounts of the program. This project uses the speeches, talks, and articles of Mormon Prophet Spencer W. Kimball to assess the Church's messaging and attitudes during the program's peak, and then it applies this assessment to modern records and analysis of the program to demonstrate how these attitudes continueto affect scholarship about the program. Using this evidence, the project calls for more scholarship uplifting the voices of those indigenous communities that have been impacted by the Indian Student Placement Program.

Christensen, Emily

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: World Languages

Author/Contributors:
Angela Gasser

Abstract Name: Transcription and Translation: Challenges, Methods, and Lessons Learned from Translating Spanish Language Oral History Interviews

Oral history interviews are a method of qualitative research that provide opportunity for stories to be heard that may otherwise be left unnoticed, in order to learn from these stories and enable change based on the perspectives that are shared. Voces del Campo/Rural Voices is a research project that aims to document and preserve the life experiences of people in Wisconsin, specifically in the Latinx community, by conducting oral history interviews. Given that Spanish is the primary language of many of the interviewees, transcription and translation of these interviews are key steps in the documenting and sharing of these experiences with a wide audience. Neither process is as straightforward as it may seem and can have crucial impacts on the integrity of the interviewee and the quality of data provided by the interview. This research first intends to explore methods of translation and transcriptions including naturalized versus denaturalized transcription and semantic versus contextual equivalence in translation. Furthermore, challenges such as accuracy, slang, word equivalency, figures of speech, and translator cultural competence and language familiarity will be examined. This will be accomplished by analyzing previous literature on these processes and offering a student perspective from the Voces del Campo project. Finally, a discussion of the lessons learned from transcribing and translating oral history interviews highlights the significance of the responsibility transcribers and translators have in accurately conveying the stories of the interviewees and the significance of the trust placed in them to do so in a respectful manner and offers practical advice for students performing interviews or oral history research in the future. The lessons additionally emphasize the importance of cultural understanding in these processes and the increased cultural understanding that comes with being a part of them.

Christensen, Jonah

Institution: *UT - Weber State University*

Discipline: Nursing/Health Science

Author/Contributors:
Jonah Christensen *Julian Chan* *David Aguilar-Alvarez,* *Joanna Gautney* *Victoria Ayala* *Jazmin Vilches*

Abstract Name: **Increased Intake of Alpha-Linolenic Acid is Associated with Higher Exam Scores**

Roughly 60% of the human brain is fat. Essential fatty acids (EFAs) Linoleic and alpha-linolenic acids are critical for building the brain's structure, synthesis of neurotransmitters, and developing the visual cortex, among other important functions.This study investigates how EFAs intake may affect brain function, and if these effects are reflected in student exam performance. We hypothesize that increased consumption EFAs will be associated with higher test scores.An analysis of cognitive function based on exam scores was conducted on 602 student participants attending Weber State University. Two-day diet records were collected. Grams as well as percentages of recommendation consumed based on required calories of linoleic and alpha-linolenic EFAs were calculated from the diet record using Diet and Wellness Plus software. The data analysis was completed using RStudio. Models were created using linear regression and variables were removed based on p-value using backward elimination. The best model created included the following variables: LinoleicCal% (the fraction of the total calories required provided by linoleic fatty acid), α-LinolenicCal% (the fraction of the total calories required provided by alpha-linolenic fatty acid), and the interaction between the previous two variables. Exam scores increased by 5.43 times, for each additional α-LinolenicCal% percentage increase ($p = 0.01$). For each percentage increase on both LinoleicCal% and α-LinolenicCal%, exam scores decreased by 0.27 times ($p = 0.02$).Our results show that it is not only the amount but also the ratio in which these two fatty acids are consumed that influences exam score performance. This is in accordance with previous studies showing that intake of omega-3 polyunsaturated fatty acids are inversely related with risk of impaired memory and flexibility in middle aged adults.

Christofides, Andreas

Institution: *MD - University of Maryland College Park*

Discipline: Economics

Author/Contributors:
Andreas Christofides

Abstract Name: **The Link Between Economic Slack and Inflation: An International Perspective**

I examine the sensitivity of the response of inflation to changes in the unemployment rate and to the output gap, or the "Phillips Curve", across a set of developed countries, using data from the International Monetary Fund's World Economic Outlook database. I then contrast the results with a subset of countries that are members of the Eurozone, using the same panel econometric methodology. Both sets of data portray a difference in the sensitivity coefficient from 1980 to 2019 compared to 1999 to 2019. In line with other research, the sensitivity coefficient is found to be of the expected sign and smaller (a statistically significant decline) in the later part of the sample when measured against the unemployment rate.The results show that the full set of countries experienced a sharp decline in the sensitivity parameter, while the Eurozone experienced a decline, but to a lesser extent. When the sensitivity parameter is measured against the output gap, this decline is no longer significant.The policy implications of these findings are that Central Banks, currently fighting inflation rates that are high by recent historical standards, may need to be more aggressive than in the past, as the smaller sensitivity parameter means that larger interest rate adjustments are required to fight inflation. However, when measured more properly (such as by looking at more homogeneous countries like those within the Eurozone), or when using a broader measure of economic activity (such as the output gap instead of the unemployment rate) the decline in the sensitivity parameter is not as large. With these new measurement standards taken into account, there is less need for a more aggressive monetary tightening by Central Banks.

Chu, Abigail

Institution: *VA - Liberty University*

Discipline: Nursing/Health Science

Author/Contributors:
Abigail Chu,
Rachel Joseph

Abstract Name: **Human Flourishing: A wholistic approach to healthcare**

Purpose: Human flourishing is at the heart of healthcare. Based on the work of Aristotle in Nicomachean Ethics, virtue ethics posits that an individual forms habits that promote virtuous behavior while modeling behavior after virtuous people. As an individual grows in virtue, he or she comes closer to eudaimonia, or human flourishing, an overall state of wellbeing. Virtue ethics may be a useful framework for operating as a nurse, while also benefitting patient wellness. The purpose of this project is to examine the literature on the role of virtue ethics in promoting human flourishing in the context of nursing. Methods: Keywords such as virtue ethics, flourishing, phronesis, eudaimonia, holistic, nursing, and healthcare were used to search databases searched including CINAHL, PubMed, and Ebsco Host. Thirty-six articles were evaluated for content related to virtue ethics, nursing theory, human flourishing, and nursing practice. Results: Centering care on human flourishing can promote wellbeing for patients and nurses. Implementing virtue ethics as a nursing framework may help the nurse to combat burnout, make ethical decisions, and provide holistic person-centered care through phronesis, or practical wisdom. Researchers have used different tools to measure human flourishing. Supporting a patient's ability to flourish can increase his or her quality of life and patient outcomes while decreasing cost and length of stay.ConclusionNurses have an important role in facilitating holistic care to enhance human flourishing. Understanding the individual holistically will help patients flourish and strengthen their inner capacity.Healthcare providers face challenges in implementation of human flourishing. Further research could examine measures of nurse flourishing. Nursing schools must consider this to prepare nursing students to be well-rounded, resilient nurses. Keywords: virtue ethics, flourishing, phronesis, eudaimonia, holistic, nursing, and healthcare

Chukunyere, Amarachi

Institution: *NC - Winston-Salem State University*

Discipline: Education

Author/Contributors:
Eboni Hayes,
Amarachi Chukunyere

Abstract Name: **Growing Together: Children's Expectations and Reactions to an Urban School Garden Experience**

Children from low-income families are at high risk for food insecurity, unhealthy diets, and low intake of fruits and vegetables (Nury 2017). In general, community gardens have been suggested as a possible method to address food insecurity. Community gardens have been shown to increase intake of fresh vegetables (Algert, Diekmann, Rendellda,; Gray, 2016). These gardens can provide food insecure communities with more access to fresh vegetables and fruits that they might not have access to on a regular basis. School gardens have the potential to teach children a variety of educational concepts. Additionally, school gardens may help children increase their intake of fruits and vegetables and have been recommended as a unique way to address food insecurity by providing children with more access to more fruits and vegetables. School children play a large role in the success of school gardens. Thus, the purpose of this project is to examine children's expectations, motivations, and reactions to a school garden experience. Additionally, the project seeks to examine the impact of school gardens located within urban, food insecure communities. The project will be implemented with a partnership between Winston-Salem State University's Growing Together Program and a local Title I Elementary School in the county. Using surveys, data will be collected from elementary school children (ages 10-11) who participate in an after-school gardening club program. Data analysis will include examining children's expectations, motivations, and experiences.

Chumley, Emma

Institution: *AL - Auburn University*

Discipline: Nursing/Health Science

Author/Contributors:
Emma Chumley

Abstract Name: Family Stress and Hospitalized Children

When a child is hospitalized, the equilibrium of the family immediately becomes unbalanced. The level of stress felt by each member of the family will vary, and their resulting coping mechanisms will affect the entire family unit. Each year, more than three million children in the United States are hospitalized. The most common causes for the hospitalization of a child are premature birth, congenital abnormalities, chronic illnesses, accidents, and cancer. When a hospitalization occurs, family roles and dynamics change; older children may become care takers, or extended family members may offer aid. The leading cause of child mortality is unintentional injury, and approximately 12,000 children and young adults (aged 1-19) die every year in the United States from these injuries. Families who experience hospitalization followed by recovery often return to equilibrium, however for those families experiencing hospitalization followed by loss, the impacts limit their ability to return to equilibrium. Families who live in poverty or low-income households already experience high levels of stress due to ongoing financial difficulties. Families living in poverty face numerous health concerns related to their financial situation; children in these families face higher risks for preterm births, chronic illness, food insecurity, and stress, and they may face struggles in having adequate access to healthcare. Factors increasing resilience among children and families include a communicative and invested health care team, education about diagnoses, treatment, and recovery, adequate support systems, and counseling. Parents and siblings lend vital support to hospitalized children, and parents often find support in extended family and community support groups. Single-parents and low-income families face tend to have weaker support systems due to lack of family members able to lend time or money. Within healthcare, education and attention should be given to family stress in order to effectively care for patients and their families.

Chunara, Nazish

Institution: *FL - Embry - Riddle Aeronautical University*

Discipline: International Studies

Author/Contributors:
Nazish Chunara

Abstract Name: Armed and Unarmed Drone Perception in Conflict Zones

This research explores the perception of armed and unarmed unmanned aerial systems (UAS) through the lens of civilians in conflict zones. The boundary of these dual-use systems is blurred and impacts drone trust between civilians and those who operate them. First, a literature review on armed and unarmed drones will be conducted to understand how much knowledge exists on the ability of a civilian to distinguish between weaponized and unweaponized drones. This will include short-term and long-term exposure to drone activity. Preliminary literature searches expose a gap in data; the response to humanitarian drones, for instance, is minimally collected. Next, language is integral to this research, and keywords will require differentiating. The terms used for these “unmanned systems” change based on the operator and mission at hand, which contributes to the perception and blurred boundaries of their utility. “Armed” means different types of weapons typically used in regions that have declared war. “Unarmed” will refer to drones used to supply aid and conduct surveillance. “Civilians” in this context will include residents in specific conflict zones around the world, along with people who travel in and out of the region for work. “Short-term” and “long-term” will describe the length of exposure to drone activity and is crucial to understanding how perception is shaped. “Conflict zone” will be defined to discern between international conflicts and domestic ones. Finally, it is important to know that the scholarly discussion around unmanned aerial systems is largely on the legal and ethical aspects of their use. There are few studies on the perception of continuous drone activity in conflict zones, where it is more likely to see armed and unarmed drones. Future research will apply this perception study to the range of psychological impacts that civilians experience.

Chundu, Sahi

Institution: *TX - University of Texas at Dallas*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Sahi Chundu

Abstract Name: **MenomiNet: A Prototype Network for Real-Time Public Lake Data**

Currently, there is a high cost and low frequency of data collection on the Red Cedar watershed in the Midwestern United States. The existing processes involved with eutrophic lake monitoring put volunteer health at risk. Nevertheless, the regular collection of eutrophic lake data is important because it can identify which rural, suburban, and urban areas are at risk of having excess levels of nitrogen and phosphorus in their water supply. Moreover, in the Red Cedar watershed, there is a severe backlog in data collection of multiple ecological metrics. We developed the research question, what is an efficient and cost-effective way to gather lake health data in real-time? Using a submersible sensor suite, our team gathered four different kinds of lake health metrics: temperature, dissolved oxygen, turbidity, and pH. This data was broadcast through a LoRA (long-range) transmitter network at distances of approximately 500 feet between transmitter and receiver. After obtaining a running log under several physical and weather conditions, including during interactions with waterfowl, as well as under multiple time frames, ranging from multi-hour stretches in the day to overnight/multi-day readings, we stored the data into log files that capture the limnological data over time. We also began developing a web dashboard to publish this data in a readable format. Our low-cost LoRA approach uses components that cost less than $1000 per node and drastically reducethe cost of lake health monitoring relative to current state-of-the-art approaches. This may empower not only academics or students but also groups of citizens, lake associations, and lake districts throughout the Red Cedar watershed to allocate funds and resources towards local monitoring projects. This level of coordinated effort would provide continuous, distributed lake health data for the first time in the watershed's history.

Chung, Myles

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Myles Chung,
Gavin Robinson

Abstract Name: **Genetic Modification of Saccharomyces cerevisiae Using ADE2 Screening**

Industrial yeast strains are used in the food and beverage industry to create products we consume on a regular basis. Genetically modified yeast can be used to create new products with unique properties, but Food and Drug Administration (FDA) guidelines restrict the use of antibiotic resistance genes to construct strains that will be in products for human consumption. To solve this problem, we are developing an industrial yeast strain that uses the ADE2 gene as a marker for genetic modification. When ADE2 is knocked out, the yeast cells accumulate a metabolic intermediate and turn red. By including a functioning copy of ADE2 along with our new genetic material, we can select for successfully modified yeast by looking for colonies that are white again. This approach to genetic modification aligns with FDA guidelines for ingredients that are "generally recognized as safe" and will allow us to create genetically modified yeast strains to be used in the food and beverage industry.

Chyl, Victoria

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Victoria Chyl

Abstract Name: **The Impact of Human-Induced Climate Change on Drought and Wildfires in California**

There is a large range of impacts that human-induced climate change has on the planet, and an issue that is impacting the Western United States is droughts and wildfires. In particular, California is being impacted through changes in precipitation levels and wind patterns, which leads to changes in the intensity of droughts and wildfires. My research question is how is climate change impacting droughts in California and thus influencing the spatial occurrences and intensity of wildfires. My hypothesis is, as the effects of human-induced climate change become more extreme, there will be a decrease in precipitation causing longer and more intense droughts and this will lead to increased frequency and severity of wildfires. Global human-induced climate change can be detected by an analysis of temperature changes from year to year. In California, this global change is leading to more droughts as measured by the Palmer Drought Index which is an indicator of drought length and severity. Droughtdata are then compared to historical data on acres burned and locations where wildfires occur in California. As seen in other countries, like Russia, wildfires have gotten more frequent and severe as human-induced climate change occurs. Many researchers conclude that some of the wildfires occurring today would not take place naturally without human-induced climate change. Since this is being seen in other places of the world, it can be inferred and my expected results will be that this trend will also be seen in California. I expect to see longer drought periods, which lead to larger and more frequent wildfires in California. Human-induced climate change will continue to have a large impact on all parts of the globe, and wildfires will be a catastrophic result of climate change.

Ciccotosto, Emma

Institution: *NC - Elon University*

Discipline: Business

Author/Contributors:
Xin Liu

Abstract Name: **Optimal Pricing Strategy for Recycling Supply Chain**

The goal of this research is to find the optimal pricing and optimal recycling compensation. To analyze the effect of offering recycling/trade-in service on retailer's pricing decisions and profitability, we developed an analytical model to examine the optimal pricing strategy and will conduct a survey to obtain consumer's behaviors regarding second-hand transactions of vehicles. From the pricing models, we compared the retailer's profit with a recycling service vs. without. Given the cost and salvage value of cars, we determined the retailer's optimal price and recycling compensation to the consumers who are willing to trade in their used cars. Our findings indicate that when salvage value of a used car is relatively low, offering a trade-in to consumers is more beneficial by providing higher prices. We extend our basic model by focusing on the behaviors of strategic consumers. Previous studies have reviewed that ignoring consumers' strategic behaviors may lead to negative impacts on retailers' performance. However, there is little literature examining the effects of the consumers' strategic waiting on second-hand transactions. Our study bridges the gap. For strategic consumers, the existence of product depreciation causes them to have uncertainties in their purchase valuations. The consumers will estimate the product depreciation before deciding to purchase. The survey wasfirst distributed among Elon University's students, to collect their purchasing and recycling behaviors. In our preliminary findings we discovered thatpeople expect about a 55% discount on their trade-in for a new vehicle. We plan to expand our data in a second round of surveying to college students in North Carolina. The survey will identify the percentage of strategic consumers and record the responses of the student's preferences or behaviors regarding participating in second-hand transactions, the channels in which they complete their second-hand transactions, and the pricing valuation of second-hand products.

Cinealis, Ava

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ava Cinealis,
Jennifer Grant

Abstract Name: Protein Structures of Prion Disease

Alzheimer's is a devastating disease that currently millions of Americans suffer from. It is a prion disease that even though is common, it is quite under-researched and there is currently no cure. Through research, scientists better understand what provokes proteins to fold into prions (disease), and work towards making better treatments. With this research, Dr. Jennifer Grant from the biology department at the University of Wisconsin-Stout and I will have a better understanding of why certain amino acid sequences misfold into prion disease. To accomplish this, AlphaFold (a software program used to predict a protein's 3-D structure from its amino acid sequence) was used on sequences from different animals with prion disease. A focus was put on the globular core of the prion protein, which has been identified as a key area that causes the proteins to fold into prions. The predicted structures we formed from sheep, cat, canine, Syrian hamster, pig, cow, rabbit, and human were evaluated for the extent of their unfolding. The directions we took with the predicted structure and susceptibility were looking at each dimer and trimer, using "Matchmaker" on AlphaFold to see how structures from different species compared to each other, and the Hydrogen bond formed from histidine and arginine. The amino acid sequences within the two cysteines and the beta sheets formed are critical points of research within Alzheimer's disease. Understanding structures and what makes proteins fold into prions is the first step to developing treatment.

Claas, Lauren

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Lauren Claas,
Zach Hilgendorf

Abstract Name: Historic land use/ land cover (LULC) change assessment following watershed degradation in the Whitewater River basin, southeastern Minnesota, USA

The Whitewater River basin, a tributary to the Upper Mississippi River, located in southeastern Minnesota, is the subject of a multi-institutional, interdisciplinary, NSF funded research project. Researchers are focused on modeling fluvial response to changing conditions at two time-scales. First, base level change during the terminal late-Pleistocene. Second, responses to Euro-American agricultural practices beginning in the mid-1800s, and the establishment of lock and dam structures in the early 1900s. Historical disturbances led to severe soil erosion in the upper reaches of the basin, deposition of up to meters of post-settlement alluvium in the main channel and high order tributaries (~140 homesteads and 3 small towns were buried), and inundation of the floodplain near its confluence with the Mississippi River. The purpose of this poster is to introduce one contribution, land cover change, to our efforts to reconstruct river response to historic disturbances. Historic aerial photographs are available for the basin from the 1930s to the present, in roughly decadal intervals. Photomosaics were created using ArcGIS Pro and Agisoft Metashape, allowing for seamless imagery across the study area. Agricultural fields and other areas were classified using image classification tools in ArcGIS Pro. Preliminary results show that as soil erosion in the uplands and deposition in the main channel and high order tributaries proceeded through time, agricultural fields reverted to forest starting in the late 1800s, and wetlands increased downstream around the same period of time. As soil erosion control practices were adopted, increases in non-agricultural and non-urban natural land cover signify a response to watershed management that suggests improving watershed conditions over time.

Claire, Anna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Anna Claire *Danielle Lehto* *Peter Zacher III*
Krysti Knoche Gupta

Abstract Name: **Electrochemical Characterization of Recast Nafion? Film Modified Electrodes in Nonaqueous Systems**

The behavior of recast Nafion® films on platinum working electrodes in nonaqueous solutions is characterized by cyclic voltammetry and rotating disk voltammetry. The behavior of recast Nafion® films in nonaqueous solutions has been observed to be different from the well-studied behavior in aqueous solutions. This work seeks to extensively study that behavior. The reversible redox couple tris(2,2′-bipyridine)ruthenium(II) hexafluorophosphate is studiedin nonaqueous solvent acetonitrile with different electrolytes (tetrabutylammonium tetrafluoroborate, tetrabutylammonium trifluoromethanesulfonate, tetrabutylammonium hexafluorophosphate, and ammonium trifluoromethanesulfonate). The effects of the electrolytes will be compared against each other and controls (an unmodified platinum electrode and a recast Nafion® platinum electrode equilibrated in aqueous solutions of the redox couples). Electrolytes have been chosen for a variety of ion charges and ion sizes; in aqueous solutions, Nafion® is a cation exchange polymer and will exclude neutral and anionic redox molecules, however this does not necessarily occur in nonaqueous solutions. Additionally, there is some preliminary evidence that trifluoromethanesulfonate electrolyte may interact with the Nafion® sulfonate groups, so this will also be explored. Studies of each electrolyte variation will involve both transient cyclic voltammetry and rotating disk voltammetry; the relationship between scan rate and peak current will be explored for transient cyclic voltammograms and the relationship between rotation rate and limiting current will be explored for rotating disk voltammetry. The data from both techniques will be combined to identify the thickness of the in situ film and the diffusion coefficient for each variation.

Clark, Cole

Institution: *CA - Chapman University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Cole Clark

Abstract Name: **The Body is the Frame: Critiquing Traditional Masculinity through Performance and Film Form**

Through a study of Mark Ruffalo's body in I Know This Much is True (Cianfrance, 2020) and Dark Waters (Haynes, 2019), this paper discusses the ability of performance and mise-en-scène to criticize traditional masculinity and communicate non-aggressive masculinity. The texts link Ruffalo's body to either his work or his connection to family members, and as he arrives at complex solutions to societal issues through a struggle between traditional and vulnerable masculinity, Ruffalo's body is permanently changed, either by physical injury or mental strain. Through select scenes I will examine how these changes in physiology represent the uncertain solutions arrived at by Ruffalo's characters, as well as how the lack of romanticization in Ruffalo's physical changes overcomes a traditionally masculine view of power. I apply David Buchbinder's findings on the expression of power through space in the masculine body, examining how the texts reject a dominant masculinity through cinematography, sound design, and editing which amplify Ruffalo's vulnerable masculinity. An analysis of Manon Garcia's writing on Simone de Beauvoir and "Masculinity As An Impasse" will show traditional masculinity as a harmful situation for men, while suggesting that masculinity can adapt and improve as a result of lived experience, seen through Ruffalo's performances. I also discuss Béla Balázs' Theory of the Film to demonstrate the role of the close up as a method of communicating the themes of the texts through Ruffalo's face, and as an inversion of Buchbinder's findings on relation of space to power in dominant masculinity.

Clark, Cole

Institution: *UT - Weber State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Cole Clark,
Timothy Herzog

Abstract Name: **Enantioselective Synthesis of Metal Coordination Complexes Using ?Chiragen? Ligands**

Chiral metal complexes are commonly used for enantioselective catalysis in the synthesis of biologically active compounds and pharmaceuticals, but they generally suffer from the difficult process of obtaining one enantiomer of the complex over another. The purpose of this research is to synthesize a family of ligands that can coordinate to a metal center in an enantioselective fashion to produce chiral metal complexes that do not need to be post-synthetically separated from other enantiomers of the compound. These “Chiragen” ligands are based on two bipyridine moieties linked by a chiral backbone that can only wrap around a metal center in a certain way due to steric hindrance. The backbone of these Chiragen ligands is highly customizable, so while only the length of the backbone is being adjusted here, future works could easily test many sizes, flexibilities, and functional groups to see how different effects could improve or hinder several properties or configurations. Since bipyridines are known to complex to nearly all of the transition metals, the synthesized Chiragen ligands will be coordinated to multiple different metals to investigate the properties of the formed compounds and their potential utility in other areas. Nuclear Magnetic Resonance (NMR) and X-Ray Diffraction Crystallography (XRD) will be used to characterize the ligands and the metal complexes. Some of the complexes are also expected to exhibit interesting optical properties, which could make them useful in photo redox applications or photovoltaics. For these, UV/Vis Spectroscopy may be used to characterize the complexes even further. Currently there are few results to report on. Fortunately, once the family of ligands has been created, the formation and characterization of metal complexes will provide a lot of data and results in a relatively short timeframe. The results obtained from this should provide plenty of useful information that could guide future investigations.

Clark, Gabriel

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Devon Schroeder,
Gabriel Clark,
Ryan Smith,
Isacc Sundermeyer,
Dylan Wells

Abstract Name: **Perception of Information and Source Reliability B**

The term misinformation is being used so frequently now that it has become an annoying word to represent almost nothing. The perception of whether information is valid seems to be very dependent on who is giving the information. There are many different factors that play a role in deciding whether a source is credible or not. In the US today we are seeing that individuals are siding with news sources that have a similar political ideology when deciding what is fact and what is misinformation. The purpose of this research is to determine what factors correlate with someone'ssuseptiblity to misleading information. The personal characteristincs being studied include racial/ethnic background of the messenger and receiver, political ideology of the messenger and receiver, news media sourcepreference, expertise level of the messenger and receiver, and percieved trustworthiness of the messenger. The study will use information about controversial topics given by various sources and determine the level of confidence the subjects have about the legitimacy of the information. Demographics regarding the subjects will be collected. A correlational analysis will be made between traits of the message sender and receiver and the rating of the source information. Data analysis will be completed in the spring semester of 2023.

Clark, Gabrielle Isabella

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Gabrielle Clark

Abstract Name: Reclaiming Stereotypes of Black Woman

My research is about racist caricatures of Black women (such as the Mammy and Jezabel figures etc) and how they have impacted Black women as well as how they navigate today's society. Most discrimination and prejudice against black women are mostly shown through microaggressions in today's society. This work could help other women of color feel seen and heard through this body of work as well as educate others about the issues of the fetishization of black women. Navigating topics of colorism, sexuality, and blackness in a society that favors heterosexual cis-white men. As an African American, I have grown up around preconceived ideas of a stereotypical Black woman. We are depicted as loud, angry, promiscuous, as well as compliant with the needs of our white counterparts in the media. I am making a body of work to reclaim these hurtful stereotypes into pieces of empowerment. The materials for this concept will range from multimedia items from antiques to copper, brass, silver, and enamel. I am dedicated to creating art that reflects my identity and allows other Black queer women to feel seen and heard through art.

Clark, Izzy

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Theatre and Dance

Author/Contributors:
Shasta Reese

Abstract Name: Shining a Light on Experimental Theatre Practices: A dissection of Neo-Futurism as it is and how it is applied in a modern performance context.

This project seeks to explore the tenets of an experimental style of theatre in a modern performance context while working with passionate students to help expand their means of artistic expression. Neo-Futurism is an active creative force and is continuing to evolve within the theatrical community. I will be basing my project on the work of The Infinite Wrench,a neo-futurist ensemble that is based in Chicago, Illinois. They are an ensemble of writers, directors, and actors that perform thirty plays in sixty minutes, all while following the four basic tenets of neo-futurism: no suspension of disbelief, speed and brevity, scripted and planned, reliance on chance. My goal is to create an ensemble of students at UWEC that mirrors this aesthetic of truthful communication between the audience and the performer. The main research questions I want to explore are 1. What exactlyisfuturism? 2. How did it evolve into neo-futurism? 3. How can we, as writers and performers, apply this specific style in a modern performance context and 4. How does a theatre practitioner develop this style of theatre? My objective for myself and the ensemble is to break out from the robotic tendencies of realism based writing and thinking and creating a new heightened theatrical sensibility. I want the audience to leave with a newfound appreciation for experimental theatre. In addition, I want our plays to evoke a particular atmosphere that challenges the audience to think for themselves. Moreover in executing this project, I want to gain dexterity in performing, writing, and directing within an experimental environment while also developing my skills as a leader amongst fellow creators. Lastly, I would like to develop this material into something suitable for a possible confrence presentation, a poster and/or a short performance at NCUR.

Clark, Kelsey

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Business

Author/Contributors:
Kelsey Clark

Abstract Name: Developing Dashboards in Python: A Case Study

This project aims to introduce the possibilities of the Python programming language in business and particularly accounting analytics. Python is a widely used language but has received very little attention from accounting professionals and academics so far. The major advantage of Python is that it is free and open-source, which makes it easily available to everyone. However, many business professionals, including accountants, auditors, etc., do not use this language. The purpose of this project is to create an application that shows how students can easily create and use analytical apps using Python. The project consists of a user-friendly stock analysis dashboard that displays information about any publicly traded company. Using Python for the coding of the analysis and public data found on Yahoo! Finance, we are able to create a free public tool. Finally, we aim to supplement the tool with proper documentation so that other faculty can teach Python by recreating this tool. This project brings awareness to open-source and what it can offer businesses of any size, as well as receiving attention in the accounting profession.

Clark, Liani

Institution: ***VA - Virginia Commonwealth University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Leiliani (Liani) Clark

Abstract Name: Casting Heartthrob Actors as Killers: Priming Young Women to Tolerate Abusive Partners

One in three women have experienced some variation of physical intimate partner violence, and one in two women have experienced psychological intimate partner violence. Various factors increase the risk of experiencing intimate partner violence, such as previous exposure to intimate partner violence at home, but there may be predispositions from women's childhoods that cause them to tolerate partners with abusive tendencies. Young women who watched movies and shows with famous heartthrobs at the time, such as Zac Efron, Ross Lynch, and Dylan Sprouse, who portrayed good characters when they were younger may be more likely to have developed an increased liking for these actors based on effects from the mere exposure effect and media priming. The familiarity and nostalgia they may feel for these actors might increase how much they trust these actors, which may influence their view of their portrayed actions in the movies and shows they appear in. However, many of these actors are now portraying 'dark' characters, such as serial killers, with Dark Triad traits. Because these young women may have developed a preference and attraction for these actors from their childhood, they may have been primed to be attracted to the 'dark' actions and Dark Triad traits that these actors portray. Young women are more likely to be more attracted to men who exhibit Dark Triad traits, and these women tend to ignore these 'dark' behaviors. This phenomenon may cause these women to be at a higher risk to experience intimate partner violence, as men with Dark Triad traits are more likely to have abusive tendencies. The present study sought to determine if there is a possible effect on young women's intimate relationships caused by many famous actors' transition from playing 'good' characters when they were young to 'dark' characters with Dark Triad traits.

Clark, Scott

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Benjamin Young *Scott Clark* *Lillian Strehlow*

Abstract Name: **Campuswide Sustainability: Designing an Early Intervention Training Module to Cultivate a Sustainably Minded Culture**

Implementation of sustainable practices are being pursued at universities across the globe. However, getting student buy-in to adopt sustainable habits can be challenging. Over a seven-year period, the University of Wisconsin-Eau Claire has collected data on student behavior as they discard lunchtime waste and conducted audits on the waste found in the compost, recycle, and landfill bins. That data has been used in multiple intervention attempts to educate students on proper waste-sorting when having access to those bins. These interventions have had limited success in generating a statistically significant shift in student behaviors. During the 2022-2023 academic year, we are pursuing a new effort with the goal of preemptively educating students on multiple aspects of sustainability before they arrive on campus. Our university currently requires incoming students to participate in online training modules on topics such as sexual assault awareness (Title IX), equity diversity and inclusion, and information security. We have received approval to add a sustainability-focused online training module for incoming students. We are designing a module that will focus on four sustainability topics: campus-wide sustainability goals, public transportation routes, using the campus's reusable food container program, and proper waste-sorting habits. Each topic will contain microlessons consisting of readings and videos. Each microlesson has questions that must be answered before the student can progress. Our goals are to educate students on effective sustainability practices, encourage them to adopt those practices as incoming students, and for them to see our campus as a place that values sustainability. We will assess the effectiveness of this intervention through future waste audits, observational studies of student behavior and survey responses. Our training module is intended to be used by all incoming students and we expect that our audits and survey results will reflect wider adoption as more and more students complete the training.

Clawson, Joshua

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Jordan Brown,
Colten St. John,
Joshua Clawson

Abstract Name: **Preventing Adherence of Candida spp. with Pre-Therapeutic Drug - Filastatin**

Candida yeasts are the most common human fungal pathogens. These primarily opportunistic pathogens can infect a variety of tissues and cause a variety of infections. They are also a common cause of healthcare-associated infections (HAI) in immunocompromised individuals. Candida yeasts usually form biofilms upon adhesion, which then increases their pathogenicity due to their lack of response to conventional treatment. Candida auris is an emerging fungal pathogen with nearly a 57% mortality rate. Filastatin is a drug not yet approved for human use but has been found to uniquely inhibit adhesion of C. albicans to the surface of several biomaterials and human cells. This study will assess if Filastatin is also able to inhibit the adhesion of three other pathogenic Candida species, C. albicans, C. glabrata, and C. auris. 96 well polystyrene microtiter plates will be used to assess the inhibition of fungal adhesion using various concentrations of Filastatin. After incubation, cells grown in the wells will be stained with either crystal violet, (or alamar blue to test for viability as well). Upon washing the plate with ice water several times to clear out stained cells that didn't adhere to the surface, methanol will be added to each well and allowed to sit for 45 minutes. The solution of methanol and stained cells will then be read by a spectrophotometer at 590 nm for the varying absorbances and will be compared to our control of both saline and Candida albicans. This will be beneficial to the future of healthcare as it will allow the number of infections with Candida species to be decreased. Future medical devices coated in Filastatin would be more resistant to Candida biofilm formation and would therefore limit the number of infections and mortality.

Cleven, Annika

Institution: *MN - St. Olaf College*

Discipline: **Mathematics**

Author/Contributors:
Annika Cleven,
Khang Huynh,
Rachel Stumpf,
Jaime Davila,
Douglas Beussman

Abstract Name: **Human Scent Analysis in Support of Tracking Dogs**

Tracking dogs can follow the scent of a person for more than a mile after they have left the trail. The current scientific hypothesis about how this is possible involves dogs smelling the volatile organic compounds (VOCs) that emanate from dead skin cells shed as a person moves. However, data from tracking dogs is not admissible in a court case as it is not understood how this scientifically occurs. Our data involves swabs of an individual's left and right arms, using the technique of Gas Chromatography Mass Spectrometry (GCMS) to identify and analyze the amounts of compounds that make up a scent. We have found that the data of an individual's left and right arms is more correlated than two random people in the data set, suggesting that each individual has a unique scent profile. Through the comparison of left and right arms from the same individual we have noticed the same compound is not present in both due to the necessity of the GCMS reaching a threshold amount for a compound to be recognized. Using Principal Component Analysis (PCA) we found that 23.1% of the variation in individuals can be explained through the first two principal components. PCA has also determined that heptanal, acetone, and hexanal, which are commonly found in every individual, are the compounds that explain the most variation between scents. Furthermore, PCA shows that there is a difference in clustering between children (under 18 years old) and adults (18+ years old). Our investigation has shown that the age of an individual contributes to the scent profile, an individual is more correlated to oneself than another, and that there are top VOCs that contribute to the variation in individuals scent profiles.

Clinch, McKenna

Institution: *KY - University of Kentucky*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
McKenna Clinch

Abstract Name: **Investigation of the Relationships Between Membrane Chemistry, Permeability, and Water Volume Fraction for Phenyl Acrylate Anion Exchange Membranes**

Commercialized polymer membranes are currently used in the energy generation industry in solar fuel devices. However, there are some issues with commercialized membranes, such as aging and cost. It is desired for a membrane to have both high selectivity and high permeability, but the commercialized membranes currently lack one or the other. There are possibilities for more efficient, lower cost membranes to be commercialized. This research focuses on testing ion exchange membranes of different compositions to determine water volume fraction and permeability to target molecules. Ion exchange membranes are used to limit the exchange of carbon dioxide reduction products in the two separate parts of the device. Here, phenyl acrylate membranes were made using two different crosslinkers, MBAA and PEGDA, with the monomer APTA. Different compositions of phenyl acrylate, PEGDA/MBAA, and APTA were made and tested in permeability experiments. Permeability is a measure of the amount of a solute that passes through a membrane. In this experiment, one side of the device starts as pure water while the other contains a target salt solution. As the experiment proceeds, the conductivity of the water side is measured over time. Conductivity is then converted to concentration of the salt based on a predetermined calibration, allowing for permeability to be calculated using Yasuda's model. Sodium acetate, potassium acetate, sodium formate, and potassium formate are the salts used in the permeability experiments; chosen to mimic the products of the CO2 reduction cells. Water uptake and membrane density are also measured to calculate water volume fraction. Water volume fraction shows how much space there is in a membrane for things to permeate through. This project investigates relationships between membrane chemistry, permeability, and water volume fraction.

Cline, Spencer

Institution: ***GA - Kennesaw State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Matthew Woodbine *Spencer Cline* *Ethan Kessie*
Ayse Tekes

Abstract Name: Modeling and Simulation of Compliant Mechanisms in MATLAB Simscape

Compliant mechanisms are the mechanisms that transfer the input force, displacement, or torque from one point to another through the deformation of its compliant members and flexible body rather than the joints such as ball bearings. They have superiorities over the traditionally designed mechanisms such that since they can be designed and manufactured as a single piece using injection molding or additive manufacturing, they are light weighted, and no need for assembly and have no friction loss. Thus, the compliant mechanisms have better performance and accuracy and find application areas in the design of locomotive robots, grippers, medical robots, and microelectromechanical (MEMs) devices. Despite all the advantages, deriving the mathematical model of compliant mechanisms is much more challenging compared to traditional rigid body mechanisms as the complexity of the design increases. Although there are several methods available to find the load-deflection curves of flexible members such as pseudo rigid body modeling (PRBM) and the first and second of the Elliptica theory, they are limited to the simple geometries including fixed-free, fixed-guided, and fixed-fixed buckling beams. In this study, we present the design, modeling, and simulation of several compliant mechanisms in MATLAB Simscape. We adopted two approaches: the model can be created using the Simulink library blocks or by importing the cad model and then introducing the flexibility using discrete beam elements. We created the models of a fully compliant five-bar mechanism including 4 rigid bars connected by large deflecting flexure hinges, a compliant dwell mechanism incorporating buckling beams, a slider, and a rail, and a compliant bistable mechanism consisting of 6 rigid bars, a slider, and fixed-free flexible beams. The Simscape models not only provide kinematic insight but also visualizes the displacement and motion of each mechanism in the mechanics explorer.

Cline, Zachary

Institution: ***PA - Susquehanna University***

Discipline: Biology

Author/Contributors:
Zachary Cline,
Aislinn Shilcusky,
Matthew Persons

Abstract Name: Behavioral responses to water contact among different species and populations of spiders

Riparian zones are dynamic ecotones that are under constant risk of flooding. Spiders that inhabit these areas may have highly variable responses to flood events. When contacting the water surface, spiders may sink and drown, swim or walk under water, or row or skate across the surface. These response differences may be taxonomically distinct and could reflect local adaptations to riparian environments. Documenting variation in behavioral responses to flooding are critical for understanding the resilience, persistence, and/or recolonization capacity of these habitats by riparian spider communities. We measured behavioral responses of spiders to simple drop tests on the water surface. Spider survival, mean time on the surface, time spent moving, and the ability to escape via a vertical or sloped surface was measured during a ten-minute test for twelve species of spider that varied in their proximity to lotic water sources. We found significant species differences in the propensity to exit the water quickly. Ground crab spiders immediately submerged and remained on the bottom for the entire testing period. Wolf spider species associated with dry fields performed more poorly on water surfaces than riparian lycosid species. Similarly field-associated species of orb-weavers showed significantly longer time on the surface and took longer to exit than riparian orb weavers. Spiders also showed significant differences in the ability to exit water through sloped rocks or vertical surfaces. These variations in time on the surface may influence diet choice of surface-feeding aquatic predators.

Cloud, Morgen

Institution: ***AR - John Brown University***

Discipline: English/Linguistics

Author/Contributors:
Morgen Cloud

Abstract Name: A Sovereign Nation: Exploring Cherokee Beloved Path and Chickamauga Consciousness' in Mary Kathryn Nagle's Sovereignty

For centuries, Cherokees have fought for self-governance not only on the battlefield and in the courts but through their literature. In Our Fire Survives the Storm: A Cherokee Literary History, Daniel Heath Justice argues that Cherokee literature should be interpreted through a Cherokee-centered lens with “intellectual sovereignty” at the center of the conversation. More specifically, when sovereignty is threatened, he identifies two culturally embedded postures as survival strategies: the “Beloved Path” when accommodation and cooperation serve as guiding principles and “Chickamauga Consciousness” when open defiance is employed.In her 2018 play Sovereignty, Mary Kathryn Nagle—attorney and descendent of the Treaty of New Echota signer John Ridge—probes the theme of Cherokee sovereignty, asking how the Nation can survive the many threats to sovereignty. The play takes the audience back and forth between the historical story of the Removal and the contemporary story of attorney Sarah Ridge Polson. She is a descendent of John Ridge working for a descendent of John Ross at the Cherokee attorney general office. Through both the historical and contemporary storylines, Nagle weaves a sense of sovereignty that extends to the 21st century Nation. Nagle’s play weighs the pluses and minuses of Justice’s two postures, representing John Ross’sdefiance of Cherokee removal while also showing “Beloved Path” themes of the Treaty Party.Ultimately, the play advocates for the “Beloved Path” posture once employed by the Treaty Party as the best way to protect Cherokee sovereignty. It’s fair to say that Nagle’s play is “intellectually sovereign,” a literary text written by a Cherokee and for Cherokees. Therefore, Nagle’sSovereigntyis Cherokee literature that is “deeply rooted in indigenousness,” as Justice says, defending sovereignty by the community-centered “Beloved Path” of nationhood and giving the best posture to the Cherokee Nation to protect against 21stCentury threats.

Cmeyla, Parker

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Dayton Feldt

Abstract Name: Skunked.

Skunked is a story about darts. I started writing the script almost two years now in my script writing class. It was during both the height of the pandemic, and the middle of winter, so I was able to dedicate a lot of time to writng this story. It was designed to be the type of project I could realistically shoot once I was finished, or close to finished with college. Alot of me and my colleagues are enraptured with high concept sweeping cinema and we all really want to learn how to produce that kind of stuff. But I wanted to actively seek out a subject matter that could be realistically produced in a college town in north Wisconsin, on a college budget. And that lead me to movies like Better Luck Tomorrow, Lock, Stock and Two Smoking Barrells,and Dodgeball: A True Underdog Story. All these movies are low scale stories without much in way of grandiose spectecale. I wanted to capture the youthful complexity of Better Luck Tomorrowand the special blend of drama and comedy that movie brought. I wanted to aim for the quick wit and sharp direction of a Guy Ritchie move like Lock, Stock. Finally the absurdism of dedicating a feature length movie to a game nobody cares about came from Dodgeball.I was able to experiment with this style and tone last semester with Folded, a spiritual prequel and proof of concept for Skunked chronicalling a poker game. And now I have the oppurtunity to shoot an exert from my script this semester and hope to share it with others. Skunked started as a goofy idea but morphed into a story of freindship, finding confidence, and making your mark before its too late. Hope you all are interested in the final product.

Coates, Hunter

Institution: ***GA - Georgia College and State University***

Discipline: Philosophy/Religious Studies

Author/Contributors:
Hunter Coates

Abstract Name: The Neoplatonic and Scholastic Influence on Leibniz

Gottfried Leibniz remains one of the most puzzling philosophers in what is considered the rationalist tradition of the 17th and early 18th century. For his metaphysics and theology, he derived many concepts from bothNeoplatonism and Scholasticism. Specifically, he developed the concept of the monad from the Neoplatonists, and, from the Scholastics, he developed a hierarchy of being to explain how the monads are organized and expressed in the world.Although scholars often seethese schools as at odds with one another, I arguethat Leibniz sought a unity of the two.

Coates, Rachael

Institution: ***LA - Louisiana State University***

Discipline: Biology

Author/Contributors:
Rachael Coates *Elizabeth Martin*

Abstract Name: Identifying the Role of MAPK15 in Triple-Negative Breast Cancer

Breast cancer is the second leading cause of cancer deaths in U.S. women, and the leading cause of cancer deaths among women worldwide. Triple-negative breast cancer (TNBC) is among the deadliest and most aggressive subtypes of breast cancer, demonstrates a high rate of metastasis, and disproportionately affects Black women and younger patients. Despite improvements in cancer treatment and increased use of mammography screenings, disparities persist within the TNBC subtype. Due to this, novel drug targets are needed. Mitogen-activated protein kinase 15 (MAPK15, also known as ERK 7/8) is a largely understudied kinase, and to date its role in breast cancer is unknown. Prior studies in other cancers demonstrated that MAPK15 is associated with increased cell invasion, metastasis, tumorigenesis, proliferation, and radioresistance. Based on this information, the aim of this study was to test the hypothesis that MAPK15 contributes to the aggressive phenotype of TNBC. This will be determined through the evaluation of cellular proliferation, drug response, cell motility and invasiveness, and epithelial-mesenchymal transition (EMT). To test this, MDA-MB-231 cells, a TNBC cell line, were transfected with a plasmid for MAPK15 overexpression. Following validation of stable transfection, survival and proliferation studies, migration assays, RNA sequencing, and qRT-PCR were conducted to assess differences in drug resistance, growth, motility, and gene expression in cells with MAPK15 overexpression. Preliminary results demonstrated that cells with MAPK15 overexpression have an increased rate of proliferation compared to control cells. Further RNA sequencing demonstrated enhanced expression of genes associated with inflammation, EMT, metastasis, and poor prognosis in breast cancer compared to the control cells. Consequently, this research has high potential to provide novel targets for individuals who have TNBC with MAPK15 overexpression through the elucidation of the function of MAPK15 in triple-negative breast cancer.

Cobain, Liz

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Liz Cobain,
Amury Miller,
Ruth Vang

Abstract Name: Minority Status and Mental Health B

Discriminatory behaviors live througout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress experienced by people with minority status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to chronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of the majority stauts. This study will identify factors associated with positive and negative mental health development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Coelho, Pamela

Institution: ***CA - Chapman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Pamela Coelho *Rebecca Day* *Claire Annino*
Daniella Benabou *Marissa Thompson*

Abstract Name: The Dream Machine as Confluence: Hallucination, Neuro-Diversity, and the Creative Industries.

Our research project focuses on how a social media campaign was designed and implemented to explore how people engaged with the ideas of dreams and hallucinations. Specifically, the class project involved working collectively, and in four dedicated groups, to build a dream machine* and research the idea of neuro-diversity and perception-diversity. The four groups were: designers, who constructed the dream machine; social media recorders, who developed a multi-platform media campaign for the project from inception to implementation, including documenting how the other groups worked and researched their areas; music composers who designed a soundtrack to accompany the machine; and multi-media poster designers, who researched the history and culture of the original dream machine to create a series of poster images. Each group required specific research focus as well as an interdisciplinary exchange across all the groups. In many ways we see this as 'confluence in action', breaking down disciplinary barriers to explore new ways of thinking about complex issues and ideas. Our presentation will articulate three key aspects of the project: how by working across multiple disciplines (notably, creativity studies, arts and humanities, cognitive sciences, communications) we came to understand better the confluence of ideas in practice; how various elements of social media can be utilized to explore wider philosophical and aesthetic issues; and how our University's program in Creative and Cultural Industries provided ways to connect across a wide and diverse audience to engage in the interdisciplinary nature of knowledge. In addition to the presentation, we would like to bring the dream machine to the conference so others might experience its hallucinatory effects and better appreciate the relationship between research and practice.*The dream machine was originally designed by the artist Brion Gysin and has been used in research to explore the idea of neuro-diversity and perception-diversity.

Coffey, Stephen

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Burhan Ali,
Stephen Coffey,
Michael Brandt,
Aya Abdrabbo,
Anna Berthiaume,
Sudeep Bhattacharyay

Abstract Name: **To Probe the Conformational Fluidity of the Intrinsically Disordered Protein GTPase HRas using Molecular Dynamics Simulation**

GTPase HRas is an enzyme that is linked to bladder and thyroid cancers. It belongs to the group of intrinsically disordered protein, which lacks definite protein structure. Their conformational fluidity allows them to adopt various structural forms making them efficient biomolecules. However, their three-dimensional structure is difficult to ascertain because the disorder prevents an ordered crystalline structure to form. Therefore, the role of their folding-unfolding dynamics on function, especially the effects of other biomolecules, has remained poorly understood. In the present study, the conformational changes of GTPase HRas have been investigated in the presence and absence of crowders using classical mechanics-based molecular dynamics simulations. Protein data was acquired from Alphafold - the artificial intelligence-aided protein structure database. Subsequently, the atomic coordinates of the protein were used to prepare five different simulation systems: water as a control, ethylene glycol, and three types of polyethylene glycol crowders of varying molecular weights ~ 600 Da, 8 kDa, and 20 kDa. Results will include 50 ns molecular dynamics simulation data, used for illustrating the effects of these crowders on the conformational dynamics and energetics of the GTPase HRas protein.

Coffin, Abby

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Abbigale Coffin *Maggie Bagatta* *Stephanie Biser*
Max Brenna *Charlie Dovorany* *Nicole Ehrike*
Erin McMichael *Lindsey Peterson* *Alex Richard*
Collin Smith *Claire Veeneman* *Nicolas Wheeler*

Abstract Name: **A survey of aquatic snails and trematodes in Eau Claire County**

Cercarial dermatitis, or swimmer's itch, is a skin infection caused by an inflammatory response to trematode cercariae, for which humans are dead-end hosts. Cercariae, the water-borne infectious stage of Trematoda (Platyhelminthes) species, escape their aquatic snail intermediate host and burrow into the skin of humans, causing a rash that lasts several days. Normal hosts for the etiological agents of cercarial dermatitis include a variety of waterfowl. Swimmer's itch is an annoyance for recreational water users and can have economic impacts on local tourism in many states of the upper Midwest, including Michigan, Minnesota, and Wisconsin. The Eau Claire City-County Health Department regularly screens seven local beaches for coliform bacteria and blue-green algal blooms, closing beaches when infectious agents are unsafe, but it does not screen for cercariae. With the goal of establishing a monitoring protocol for the causative agents of swimmer's itch, which is sporadically reported by lake goers in Eau Claire County, we surveyed four Eau Claire beaches for aquatic snails and screened them for trematode infections. Living snails were found at two locations, with most of these being the invasive Chinese mystery snail (Bellamya chinensis), as well as representatives of the families Planorbidae, Physidae, Hydrobiidae, and Valvatidae. Two snails were infected with trematodes, and DNA barcoding and life history data were used to identify these as Echinostoma trivolvis and Notocotylus urbanensis, both of which primarily infect muskrats as their definitive host. Although echinostomes and notocotylids are not known to be associated with cercarial dermatitis in human populations, our preliminary survey establishes the presence of trematode-susceptible snails and trematodes in public recreational lakes in Eau Claire. Further survey work is necessary to understand the potential effects of invasive mollusks on indigenous mollusks and their parasite populations.

Cohn, Kerri

Institution: ***FL - Florida Atlantic University***

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Kerri Cohn

Abstract Name: Should Marijuana Be Legal?

According to the National Center of Drug Abuse Statistics, 22% of men and 17% of women have used illegal drugs within the past year. Americans are using illegal drugs at a higher rate than they ever have before while simultaneously the government is legalizing marijuana. This sparked the question: what Americans really think about the legalization of marijuana? I hypothesized that party affiliation would influence people's opinions and there would be a difference in the opinions between different political parties. To test my hypothesis, I conducted a 12-question survey in Survey Monkey and collected data using Amazon M-turk. I gathered data from 186 Americans aged 18 and over with varying ages, gender, political affiliation, and education levels. The results show the vast majority ofAmericans were in opposition of the legalization of marijuana. Furthermore, I found a statistically significant differencebetween political parties and the extent of support regarding thelegalization of marijuana.Policy makers can use the results of this survey to better understand who supports drug legalization and response accordingly.

Coil, Collin

Institution: ***DC - American University***

Discipline: Political Science

Author/Contributors:
Collin Coil,
Caroline Bruckner,
Karen O'Connor,
Natalie Williamson,
Jeff Gill

Abstract Name: A Seat at the Table? Not for Women

The number of individuals who testify before committees dealing in substantive issues before Congress each year number in the thousands, yet we know next to nothing about these participants in the policy process. This section of our study is to count the number of women who appear as congressional witnesses, analyze the gender breakdown among witnesses who testify,and explain the factors that affect those numbers. We look at the role that political party, party control, gender of chiefs of staff, of members, location of hearings, and chamber rules among others to explain women's participation as witnesses. We employ a unique regression methodology to analyze the factors driving diverse representation in our dataset.To date, we have identified the gender of more than 37,000 witnesses before over 7,500 committee hearings from the 110th through 116th Congresses, and this represents the largest published dataset on congressional witnesses that tracks witness diversity.This project also tries to determine the question, "does it matter?" by surveying current and former congressional staff members to understand if witnesses are important to the political process and through what mechanisms witnesses impact legislative outcomes. Therefore, this project not only seeks to demonstrate Congress's record in hearing from diverse witnesses, but also pioneering a new understanding of why witnesses are important to the legislative process.

Colard, John

Institution: *KS - University of Kansas*

Discipline: **International Studies**

Author/Contributors:
John Colard

Abstract Name: **Soviet Small Unit Tactics in The Battle of Kyiv**

In the Battle of Kyiv (2022), the Russian and Ukrainian fighters employed bounding overwatch, proper unit dispersion intervals, and forward security elements. Many of the tactics seen in the battle may be able to trace roots back to Soviet-era teachings. Teachings of urban combat, forged on the Volga River and during street-to-street fighting in the Battle of Stalingrad. My research explores how both the Ukrainians and Russians implemented Soviet small-unit tactics in the Battle of Kyiv. The examination of combat footage from the Battle of Kyiv and the search for the presence of Soviet small unit tactics will showcase the effectiveness and the implementation of these tactics in a modern war. I will first analyze the pre-defined Soviet Tactical Doctrine in the Red Army Archives and THE SOVIET ARMY OPERATIONS AND TACTICS (SAOT). After having examined these works detailing Soviet small unit tactics, I will then investigate online combat footage from the Battle of Kyiv and search for the presence of such tactics. The research will likely show how many combat forces fought with Soviet small-unit tactics in the Battle of Kyiv. The knowledge gained through examining archives and combat footage will help to understand how, and ifantiquated tactics hold up in a modern crucible such as Kyiv.

Colbeck, Victoria

Institution: *NC - Elon University*

Discipline: **Public Health**

Author/Contributors:
Victoria Colbeck,
Yanica Faustin,
Stephanie Baker

Abstract Name: **Quality of Care and Black American Maternal Health Outcomes Study**

Poor quality of maternity care is associated with adverse maternal health outcomes resulting in racial disparities in the United States. Historically marginalized populations disproportionately experience adverse pregnancy outcomes such as maternal mortality and morbidity. There is a need to assess the quality of maternal care for Black birthing persons who give birth in hospitals, birthing centers and at home. The purpose of this study is to investigate and explore the quality of care and treatment experiences for Black birthing persons while seeking care during pregnancy/labor/delivery, in the United States from 2018-2022. An online survey is being used to collect data on the quality of care and racism experiences of participants. The survey includes quantitative and qualitative questions, allowing participants to expand on their responses to questions beyond one-word answers. A racial equity framework was used to inform the data collection process and to take into account the historical context and multidimensional manifestations of racism. The study aims to collect positive birth experiences in particular, since positive narratives on birthing while Black in the U.S. are not well represented in the literature. Data analysis will include comparing the “positive” and “negative” experiences of those who did and did not experience maternal morbidity. Findings from this study will offer suggestions on how care providers in childbirth settings can better serve this population and make progress towards eliminating racial disparities in maternal mortality and morbidity.

Coleman, Chartise

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Chartise Coleman,
Dr. Konda Reddy Karnati

Abstract Name: **Exploring Geographic Diversity of SARS-CoV-2 Genomes**

The current outbreak of coronavirus disease 2019 (COVID-19) pandemic is caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2). Despite several preventive measures and initiatives from various countries, there is no improvement in the situation so far. This is presumably due to the absence of any effective treatment or therapy to date. SARS-CoV-2 is a single stranded RNA pathogen which is characterized by a high mutation rate. It is vital to explore the mutagenic capability of the viral genome that enables SARSCoV-2 to rapidly jump from one host immunity to another and adapt to the genetic pool of local populations. In this study, we analysed SARS-CoV-2 sequences collected from infected patients from various geographical regions using multiple sequence alignment and phylogenetic analysis. We found that there does not seem to be a correlation with geographic areas and mutations in the results of the trees, closely related genomes within countries such as Jamaica and Belgium or Slovakia and India show that even though the countries are not close to each other, the sequences of the SARS COV-2 genomes could be closely related. This could be due to mutations being random, it could purely be by chance.

Coleman, Robert

Institution: *VA - The College of William & Mary*

Discipline: History

Author/Contributors:
Robert Coleman

Abstract Name: **Reality or Humanity: Using Creative Expression in the Holocaust to Rethink Jewish Historiography**

From 1939 to 1945, millions of Jewish people endured the most abhorrent and purely evil facets of humanity and human capability. However, even though the Jews in the Holocaust faced brutally oppressive and dehumanizing conditions, they chose to engage in the purest forms of human expression and creativity, in places like the Theresienstadt Ghetto. Simultaneously, however, music and art were forced upon Jews by the Nazis as a mode of torture dehumanization, and humiliation. Scholars of Jewish Historiography have typically sought to tell the story of the Jews by emphasizing themes of either persecution or empowerment. Using creative and intellectual expression in the Holocaust, this paper seeks to show that the history of the Jews is one of power and humanity without downplaying their persecution and suffering. It consults a wide array of primary sources, particularly Holocaust survivor testimonies, children's drawings, poetry, and memoirs. Finding this balance between persecution and empowerment will provide a more nuanced and human understanding of Jewish history in order to give a more accurate representation of their legacy. Stereotypes force individuals to create rigid frameworks. Scholarship must aim, therefore, to create accurate and human depictions of the histories of the Jewish people.

Colletti, Andrew

Institution: ***WI - Carthage College***

Discipline: English/Linguistics

Author/Contributors:
Andrew Colletti

Abstract Name: "I Yam what I am!" the Secret to Identity and Authenticity hidden within Ralph Ellison's Invisible Man

Ralph Ellison's Invisible Man is a chaotic narrative of a black man struggling to find his identity and his way in a world where he is never certain who he is. Haunted by a deathbed comment from his grandfather, the narrator finds himself endlessly pushed from moment to moment, without space to discover his true feelings, social alignments, and personal beliefs. I argue that Ralph Ellison's Invisible Man suggests that identity is not concrete—but fluid, being highly dependent on social situations. In my essay, I trace the progression of the narrator's self-actualization. After being pushed around and abused for half of the novel, the narrator begins to embrace his likes and dislikes in a monumental scene where he accepts his past and rediscovers his love for Yams. This embracement of pleasure is key to understanding identity within the novel. I take the narrator's discoveries, and Ellison's comments on identity,and frame them in the scope of Foucault's ideas of self-hood. Through my unique reading of Invisible Man, I provide socially significant meditations upon identity, authenticity, and the self. I discover what itmeans to be invisible, and how this revelation is important for readers of all races.

Collier, Hannah

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Psychology/Neuroscience

Author/Contributors:
Dijana Mitrovic,
Jacob Munter,
Hannah Collier

Abstract Name: Parent-child weight-related conversations and body image development: Investigating the moderating effects of the parent-child relationship

The current research question explores how parent-child relationships can contribute to the effects of conversation about diet or weight on adolescent body image. Past research has shown the negative effects of mothers encouraging daughter's weight loss or dieting is buffered by mother's conversations about her own weight or diet. One possible explanation for this is that these bi-directional conversations are happening in a close, more cohesive relational context between mothers and daughters. This research uses a survey design to measure responses from participants on current relationship with parents (e.g., perceived mutuality, cohesion, parent-adolescent attachment), parent-child conversations about weight and diet, body image and disordered eating outcomes. Data in this study was collected from psychology students at the University of Wisconsin-Parkside, who responded to survey questionnaires via qualtrics. We predict that the stronger the parent-child relationship, the less negative impact conversations about body image and diet will have on adolescent body image and disordered eating. This research can help show the major effects of parent contributions to adolescent's perspective on diet and weight, in addition to highlighting key issues that could influence the impact of these types of conversation. With the growing amount of individuals experiencing low self-esteem due to poor body image and weight concerns, this research question is an important topic in today's society. Answering this research question will aid in understanding the effects of parent-child relationships on adolescent body image and disordered eating concerns.

Collins, Zach

Institution: *NC - Western Carolina University*

Discipline: Education

Author/Contributors:
Zach Collins,
Sara Franz,
Veronica Funes

Abstract Name: **How Gen Z Views Incentive and Productivity in the Context of Continuous Improvement (CI)**

This study examines how Generation Z views incentive and productivity in the context of continuous improvement (CI). Many industries have successfully identified CI factors that have improved overall productivity. However, applying previously found CI factors may not extend the longevity of CI. Continuous improvement is an ongoing improvement of a process, technique, or product that can be judged against its effective use of resources (productivity). As such, the question of what incentives drive a specific population of potential workforce leaders, such as Generation Z, remains. This research aims to identify the factors that impact the support for CI initiatives among college students. Specifically, the study examines how incentives encourage productivity and promote job growth and satisfaction among Generation Z students who concurrently study and work. Two hundred undergraduate junior and senior student participants will complete a survey on whether an educational process (including educational resources), an embedded incentive system, has encouraged productivity both in academics and in their current jobs. The data collected will be run through regression analysis to investigate the relationship between the current incentive system and job environment incentives toward productivity. The results of this study will add to the previous research in understanding the correlation between academic performance and what incentives motivate students to be productive in their studies and their motivation to continue working during their studies. Research on this subject is needed to build a complete understanding of the correlations between undergraduate employment in relation to academic success and workforce productivity orientation in the context of continuous improvement orientation.

Colquiett, Heaven

Institution: *AL - Samford University*

Discipline: Biology

Author/Contributors:
Heaven Colquiett,
Christa Chery

Abstract Name: **Parental Criticism and Willingness to Intermarry**

Willingness to marry someone of a different race is influenced by racial climate. How parents respond will impact how they present preferences for partnering to their children. Research suggests a relationship between race, gender, partner preferences, and parental criticism in partnering. This study examined the impact of race relations on marriage preferences and the role parents have in willingness to intermarry. Participants (n=207) completed a survey containing the Family Emotional Involvement and Criticism Scale I and the Personal/Global grid survey, which measures willingness to partner with someone outside of their race. First, we hypothesized that parental criticism would correlate with the likelihood that participants would partner with someone outside of their race. Data revealed no relationship between criticism and willingness to intermarry for men, but for women this relationship was significant (r=.166, p=.040). The second hypothesis was that race and gender impact partnering with someone outside their race. No differences were found. Findings can inform family therapists and educators individuals willingness to partner with people outside of their race.

Comerford, Mitch

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Olivia Felix,
Carrie Andersen,
Mitch Comerford,
Karissa Dachel,
Adam LeCleir,
Madison Schultz

Abstract Name: **Political Divide**

The current political climate in the US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Condon, Cole

Institution: *OH - University of Findlay*

Discipline: Biology

Author/Contributors:
Cole Condon *Zach Meyer* *Madyson Hetsler,*
Nathan Osborn *Jaden Humphrey* *Lauryn Steele*

Abstract Name: **Monitoring Antibiotic Resistant Populations as a Correlative to Water Quality**

Agricultural land use can have adverse effects on the surrounding waterways, which may cause environmental and economical disturbances including but not limited to species assemblage disruption, loss of habitat and wildlife and human health impacts. There is a need to monitor in vivo aquatic systems, specifically those in agricultural areas, to not only provide a more holistic view into the correlation between agriculture land use and aquatic environmental disruption but also to develop more succinct and effective monitoring and management guidelines. The Blanchard River serves as an excellent model system suitable for monitoring antimicrobial resistant microbe sustainability within a highly agricultural area that serves as a contributor to the Lake Erie basin. Several indicators suggest that the Blanchard River watershed may provide a suitable habitat for the antibiotic resistant microbes including MRSA (methicillin resistant S. aureus). Outside nosocomial infections, minimal research has been completed to determine the reservoirs of MRSA and other resistant microbes. One hundred and twenty-six sites within the Blanchard River and its tributaries were monitored for antibiotic resistant microbes including MRSA. All sites had antibiotic resistant populations while twenty-six of the sites harbored MRSA. Sixteen Areas of Concern (AOCs) were chosen in conjunction with the Blanchard River Watershed Partnership to determine if traditional water quality measures of E. coli concentrations,nutrient levels and macroinvertebrate populations correlate with antibiotic concentrations and resistant populations. Additionally, microcystin concentrations were measured as they are known to enhance horizontal transfer of antibiotic resistance genes. There is no correlation between land usage or antibiotic concentrations and the presence of antibiotic resistant microbes. There were weak correlations between antibiotic concentrations and pollution resistant macroinvertebrates and a weak negative correlation between E. coli levels and pollution sensitive macroinvertebrates.

Conley, Baker

Institution: *MI - Hope College*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Baker Conley *Olufemi Oluyedun*

Abstract Name: **The Effect of Motivational Music on Power in an Anaerobic Sprint Test**

Background: Previous literature suggests music can enhance exercise performance. Extant work has focused on high intensity anaerobic exercise with emphasis on two conditions: 1) music preference (preferred, non-preferred, no music), and 2) music tempo (slow, middle, fast). The primary objective outcome used to define performance is peak power. To date, previous work has examined music preference and music tempo separately. More recent work has explored the influence of motivational music; posited to incorporate elements of music preference and tempo simultaneously. Purpose: The purpose was two-fold: 1) to examine the effect of music condition (motivational, non-motivational, no music) on peak power performance during the Running-Based Anaerobic Sprint Test (RAST); 2) to assess whether motivational music survey scores (assessed the degree of motivation the motivational music provided) predicts peak power. Methods: 20 college-aged participants completed a modified RAST consisting of 6 consecutive sprints over 17.5-meters. Each sprint was followed by a 10 second rest period. A total of four testing days (baseline day; three formal testing days) were completed one week apart. Participants were randomly assigned to three conditions: motivational music (Eye of the Tiger by Survivor – music selection mirrors previous literature), non-motivational music, (Window in 7's by Meredith Monk – self-selected by researchers) and a no music condition. All participants were counterbalanced to complete each music condition. Participants completed motivation music surveys each day. Results: Repeated measures ANOVA analyses showed a main effect of time (peak power increased each day). No interaction effect was found for Time X Condition. Regression analyses revealed that self-reported motivational music did not predict peak power scores. Conclusion: Findings show evidence for increased peak power over time. However, lack of differences across conditions suggests a more nuanced approach is warranted to more appropriately capture the effect of music on exercise.

Conley, Latricia

Institution: *TN - LeMoyne-Owen College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Latricia Conley,
Katherine Hidalgo,
Helen Sable

Abstract Name: **A Measurement of Cocaine-Induced Locomotor Activation and Cocaine Conditioned Place Preference in Lphn3 Wildtype and Knockout Rats**

Variants in Lphn3 gene expression are associated with a pre-disposition to develop attention-deficit hyperactivity disorder (ADHD) and predict substance use disorder (SUD) in ADHD patients. To assess the impact of Lphn3 deletion on the rewarding effects of cocaine, we assessed cocaine conditioned place preference (CPP) in Lphn3-/-(i.e., knockout, KO) andLphn3+/+(i.e., wildtype, WT) rats. The CPP apparatus was equipped with photobeams to detect horizontal and vertical movement andhad2 visually distinct chambers separated by a removable door. On day 1 (habituation) and 8 (final test), each rat was placed in the apparatus with the door removed for 15 min. On days 2, 4, and 6 each rat received an intraperitoneal injection (IP) of 10 mg/kg cocaine 5 minutes before being restricted for 15 min in the chamber that was less preferred on day 1. On days 3, 5, and 7 each rat received an IP injection of saline 5 min before being confined to the other side of the chamber for 15 minutes. Horizontal beam breaks in each chamber were recorded as a measure of locomotor activity across all testing days and time spent in each chamber was recorded on days 1 and 8. Preference was determined by subtracting the amount of time spent in the drug-paired chamber on day 1 from the amount of time spent there on day 8. It was hypothesized that cocaine-induced locomotor activation would be greater in the KO rats and that they would show a greater preference for the cocaine-paired chamber. Surprisingly, the KO rats did not exhibit cocaine-induced locomotor activation. Compared to day 1, both genotypes exhibited an increase in time spent on the drug-paired side on day 8. However, there was not a difference between the genotypes in their final preference for the drug-paired side.

Connelly, Allison

Institution: *PA - Millersville University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Allison Connelly

Abstract Name: **Living With What We Can't Remember: A Documentary on the Relationship Between Trauma and Memory Loss**

Memory tends to be thought of as something straight forward and linear, like a camcorder capturing life as it happens. But the process of how our brain goes about encoding each experience we encounter is a web still being unwound. In the case of traumatic memory, this only rings more true. Trauma, unlike non-traumatic memory, is often stored in fragments. During the event, the prefrontal cortex goes “offline”. In place of a traditional narrative consisting of a beginning, middle and end, the limbic system latches onto different sensory input (information that will often later act as triggers). It’s this fact that sits at the core of a notion growing increasingly more embraced, first by the psychology field and now by the general public: The body remembers trauma.Paper Birds is a short documentary illuminating what it’s like to live with what you can’t remember in the conventional sense, and–more importantly–demonstrates that healing is possible even in the absence of answers. Following my own story of navigating life with somatic–sometimes referred to as “body”--memories and the delayed onset of PTSD, this piece presents a complex, misunderstood facet of trauma through interviews, reenactments and symbolic b-roll in a way that can be easily digested by the general public.The long standing stigma tied to recovered memories and the complete lack of media representation regarding body memories has, for far too long, discouraged survivors from talking openly about their experiences–an act that only exacerbates feelings of guilt and loneliness. Paper Birds stands to change that.

Connelly, Jillian

Institution: *PA - Moravian University*

Discipline: Biology

Author/Contributors:
Jillian Connelly

Abstract Name: **Predator Avoidance Behavior in Grass Shrimp**

Grass shrimp (Palaemon pugio) are common and ecologically important in coastal environments along the Atlantic coast of the United States, but little is known about their behavior. Predator-prey interactions and predator avoidance behavior are particularly understudied in this species, especially because grass shrimp are a major food source for commercially and environmentally important blue crabs (Callinectes sapidus). The primary goals of this study were to categorize predator-prey interactions with blue crabs and determine if shrimp predator avoidance behavior changed in response to the ocean acidification associated with climate change. Because ocean acidification interferes with decision-making and predator response behavior in some marine animals, behavioral assays were developed in this experiment to assess shrimp predator avoidance (in a Y-maze) and escape responses under current and future ocean conditions. While shrimp made incorrect decisions slightly more often and took longer to make decisions under acidified conditions, these differences were not statistically significant, indicating the grass shrimp are likely resilient to the direct effects of ocean acidification, potentially due to large natural fluctuations in their variable coastal environments. In direct predator exposure experiments, we observed and quantified previously undescribed predator inspection behavior in P. pugio. This type of behavior is largely undocumented in invertebrates, which presented the opportunity to examine the complex and unknown predator-prey dynamics between two ecologically important species. There was a high degree of individual variation in this “bold” predator inspection behavior, suggesting a difference in behavioral traits between shrimp. Because existing research on predator inspection behavior centers almost exclusively on vertebrates, these findings have interesting implications for invertebrate behavior and the evolution of predator avoidance strategies like these. Grass shrimp appear to have complex social structures and predator avoidance strategies that are only now being documented, which is essentialfor understandingtheir ecological role.

Connor, Mary

Institution: *KS - University of Kansas*

Discipline: Art/Music History

Author/Contributors:
Mary Connor

Abstract Name: **BACK TO BENIN: AN ANALYSIS OF THREE CALLS TO REPATRIATE THE BENIN BRONZES**

The Benin Bronzes are currently globally dispersed often without acknowledging the object's origin of unethical acquisition by British troops from the Kingdom of Benin, located in present-day Nigeria. The research question attempts to investigate The Berlin Ethnographic Museum, The Smithsonian Museum, and The British Museum in their choices to create spaces for ethical repatriation for the separated collections of Benin Bronzes. Scholars examining the issue are researching how museums and educational institutions can progress in establishing systems of ethical and accountable repatriation. These newer ideas are cultivated through evaluating past repatriation cases to determine the approaches in taking accountability for previous unethical acquisitions. I will analyze data from online media publications and platforms of the three museums, historical documentation of each acquisition, and news sources engaging critically with each museum's responses to repatriating the Benin Bronzes. With the collected data, I will use descriptive and comparative analysis methods to summarize the data, providing background for each repatriation case, and then assess where the museums' public actions towards repatriating the Benin Bronzes differ. The results hope to gain a further explanation of the range in repatriation approaches allowed through the museum's first person accounts among outside criticism. Understanding each museums' stance in relation to outside criticism will display the current allowance for museums to continue hosting unethically acquired cultural objects while comparatively more progressive efforts to repatriate exist.

Connoy, Chris

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Molly Halverson *Chris Connoy* *Lydia Przytulski*
Chase Fillion *Daina Kalnina* *Kya Meunier*
Zach Rohde *Noah Netzinger* *Evan Weiher*

Abstract Name: **Plant functional community assembly along a stress gradient in Northern and Southern Wisconsin forests**

Functional community assembly seeks to understand communities in terms of mixtures of functional traits. Stabilizing ecological selection can cause communities to have lower than expected trait diversity, while disruptive ecological selection can produce greater than expected trait diversity.Similarly, directional ecological selection can alter mean trait values. Environmental stress (e.g., low soil moisture) can reduce trait diversity, but the evidence is limited. Community assembly may be influenced by the spatial extent of the species pool and the spatial grain size of the sample plot. We sampled plants in 40 locations in Northern forests (mainly evergreen conifers) and Southern forests (mainly deciduous trees) across a strong gradient in soil moisture. Each location had three sample plots with three grain sizes: (0.1m^2, 1.0m^2, 10m^2). Four functional traits (two size traits and two leaf economic traits) were collected for every plant species. We used Monte Carlo simulations to estimate the amount of functional trait diversity and mean trait values that would be found if community assembly was caused by random ecological drift. The simulations used four species pool scales: regional (all observations), within Northern or Southern Wisconsin forests, within specific forest types, and within each forest location.With a large-scale species pool perspective, communities had lower than expected trait diversity, but with small-scale perspectives the pattern switched.Leaf size diversity was greater than expected using the smallest species pool. Moisture had significant effects on both trait means and trait diversities, but the relationships strongly differed in Northern versus Southern forests. Some results supported existing theory, for example dry forests tended to have more conservative leaf traits and also lower trait diversity in some cases. Functional community assembly differed in Northern versus Southern forests, and so there are unique assembly rules for each region.

Conrad, Delaney

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Delaney Conrad,
Rushit Dave

Abstract Name: **A Machine Learning Approach To Detecting Deepfakes**

The ability to manipulate videos has been around for decades but a process that once would take time, money, and professionals, can now be created by anyone due to the rapid advancement of deepfake technology. Deep fakes use deep learning artificial intelligence to make fake digital content, typically in the form of swapping a person's face in a video or image. This technology could easily threaten and manipulate individuals, corporations, and political organizations. As the technology for creating deepfakes continues to improve, these manipulated videos arebecoming increasingly undetectable. It is crucial to create methods to combat this problem. Previous research has been conducted on the various techniques to detect deepfakes, and though some models show promising results, many models struggle with reproducibility and practicality when exposed to real-world scenarios. Future work could consist of creating models without the tools used to generate deepfakes and the collected dataset in mind. Thus, we aim to create a more general model that can be repeated on a variety of real data. To achieve this, we will analyze multiple datasetsand the models that have been created from them. After comparing the strengths and limitations of the top models, we plan to achieve a new model that is more accurate at detecting real-world deepfake videos. As deepfake technology continues to accelerate, it is essential to continue building models that can detect it because if we do not, it will be impossible to discern digital truth from reality.

Conroy, Aidan

Institution: *NY - Colgate University*

Discipline: **Biology**

Author/Contributors:
Aidan Conroy,
Engda Hagos

Abstract Name: **Cells Null For KLF4 Respond To DNA Damage Less Effectively Than Wild-Type Cells**

Aidan Conroy and Engda HagosDepartment of Biology, Colgate University, Hamilton, NY, 13346, USAKrüppel-like factor 4 (KLF4) is a highly conserved zinc-finger transcription factor involved in multiple cellular processes such as development, differentiation, and cell cycle regulation. In response to DNA damage, KLF4 expression is upregulated by the tumor suppressor p53. Furthermore, mouse embryonic fibroblasts (MEFs) null for Klf4 have been shown to exhibit increased genomic instability such as aneuploidy, centrosome amplification, and DNA double-strand breaks (DSBs). In this study, cells wild type for Klf4 (+/+) and null (-/-) Mouse Embryonic Fibroblasts (MEFs) were cultured and studied as a model for human colorectal cancer. Chemotherapeutic drug, etoposide, was utilized to induce DNA damage in Klf4 (+/+) and (-/-) MEFs with varying recovery times to investigate the role of KLF4 regulating DNA repair proteins and cell cycle regulation. Western blotting with primary antibodies for DNA repair proteins and gamma-H2AX was used as an effective biomarker to monitor DNA damage. At the basal level, immunostaining revealed that Klf4 (-/-) MEFs in comparison to Klf4 (+/+) MEFs exhibit significantly more DNA damage. Additionally, our data has shown that cells that have functional Klf4 exhibited more overall DNA damage recovery as compared with Klf4 null cells. We also found that Klf4 upregulated the DNA repair and cell cycle regulator protein, CHK1 immediately following DNA damage. Our data strongly suggest that Klf4 plays a significant role in DNA damage repair in mouse embryonic fibroblast cells. These results indicate that Klf4 plays a crucial role in maintaining genetic stability and support the previous findings that KLF4 is a tumor suppressor.

Conteh, Isata

Institution: *MD - Bowie State University*

Discipline: Physics/Astronomy

Author/Contributors:
Seyi Akinwale,
Isata Conteh,
Roxan Rockefeller,
Chikezie Igwebuike,
Bernadine Lacdao,
Dr. Dawit Hailu

Abstract Name: **On the Kinematics of Sneezing Droplets (Computational Analysis)**

The key to the mitigation of the spread of coronavirus disease such as COVID-19 is to understand how microbial pathogens travel once they leavethe source. Tracking the trajectories of viral particles as asymptomatic carriers sneeze, cough, and even speak would provide a very good picture of what measures to take to curb disease transmission. Under this CURE project, students of Physics 251 and Physics 271 employed two-dimensional kinematic equations to investigate the trajectories of the particles leaving a simulated infected person. The novelty of this study is that we base our investigation on a single-particle approach where we follow trajectory of single particle instead of bulk movement of fluids. Using the height of the asymptomatic carriers as a controlling parameter, we assess the extent of infective range for a variety of solutions. It is worth mentioning that both groups of students, of 251 and 271, used their own recipes and method of data collection distinct from each another. As an extension of the simulation of the trajectories, 271 students used the collected data to produce computer-simulated visualizations of the individual trajectories using statistical mode approach. We focus on the computer-simulated visualization for this project.

Contianos, Alex

Institution: *NC - Appalachian State University*

Discipline: Theatre and Dance

Author/Contributors:
Alex Contianos

Abstract Name: **"The Protocol of Invisibility:" Examining the Dangers of Secondary Sources of Secondary Sources**

Marilyn A. Katz's 1998 article, "Did the Women of Ancient Athens Attend Theater in the Eighteenth Century?" examines points made by Karl August Böttiger in his article from 1796 entitled "Were Women in Athens Spectators at Dramatic Performances?" She apparently aims to answer the question both Böttiger's and her own articles (at least in their titles) overtly pose: Did women actually attend ancient Greek dramatic performances? In her analysis of Böttiger's writings, Katz introduces Böttiger's assertion that ancient Athenian women were likely not present in the audience because of the theatre's status of being "a civic, political and ritual arena;" she then introduces a concept introduced by contemporary historian Simon Goldhill—"the protocol of invisibility"—which Greek women would have followed, and an idea to which she asserts Böttiger would have subscribed. But the title of Katz's article—so closely contouring Böttiger's own—implies that it is going to address this question, that is, whether Athenian women were present at ancient Greek dramatic performances; however, her text never substantively addresses the question (more than the wry paraphrase ofBöttiger in her title), instead focusing almost exclusively on the writings of Böttiger. In other words, the putative subject—women in ancient Greece—remains elusive, as if even among scholars, women as historical subjects are once again forced into a "protocol of invisibility." The following paper, in a close reading of Katz's article on Böttiger, problematizes this historiographic feint, offering up a cautionary tale regarding the dangers of secondary sources conversing with secondary sources, conversations which reveal more about the historians and their own socio-historical contexts, and which bring us no closer to the actual subject they are supposedly examining.

Contreras, Jacob

Institution: *IL - Trinity Christian College*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Jacob Contreras

Abstract Name: **Exploring the Movements of Philosophy As Practice Through a Phenomenological Approach**

Historian of philosophy Pierre Hadot (1922 - 2010) revolutionized the study of ancient philosophy through his insistence that, for ancient thinkers, philosophy was more than just a framework of ideas captured in discourse; it was always and inherently grounded in a way of life and everyday practices. Theories and discourses were produced during the process of these practices, but theory was always secondary to practice in both cause and significance. In line with this, the primary concern of ancient philosophical schools was not transferring certain ideas to the minds of their students, but rather fostering a modification of the self using procedures Hadot calls “spiritual exercises.”Itrace a unifying theme throughout Hadot’s work, that of philosophy as a dynamic movement (as opposed to the static architecture of ideas it leaves in its wake). I offer two images for conceptualizing this movement: an ebb and flow (both being informed by the world and feeding into the world), and the myth of Theseus’s Ship (always being radically reborn, and yet still circling back to the same identity).While drawing out how these movements are present in Hadot’s work, it’s important to avoid reducing the discussion of philosophy as practice to merely a theoretical statement. In order to do this, I instead explore Hadot’s insights through a concrete analysis of lived life. Engaging in a phenomenological (not merely autobiographical) account of my own practices as a student of philosophy, I demonstrate how the spiritual exercises Hadot finds in ancient philosophy can illuminate and direct contemporary life.

Conway, Lindsey

Institution: *NC - High Point University*

Discipline: Art/Music History

Author/Contributors:
Lindsey Conway

Abstract Name: **Narrative Perception in Cy Twombly?s 50 Days at Iliam (1978)**

Cy Twombly’s series, 50 Days at Iliam (1978), asserts itself as a conflation of classical antiquity and modern art. While much of the contemporary discourse around Twombly’s work rests upon a visual and historical foundation, this paper will examine the Iliam series through interdisciplinary means, incorporating psychology and biology along with art history to interpret this group of 10 abstract paintings in a novel way. The paper begins by discussing biological structures and their connection to the brain’s processes of perception. I argue that Twombly’s Iliam paintings are decoded by what psychologists call “top-down processing”, a process by which complex narratives are understood with aid from memory. This stands in contrast to “bottom-up processing”, a process where sensual information is constructed into more detailed narratives, by which most abstract art is thought to be perceived. Biographical research into Twombly’s childhood and familial relationships provides evidence of a lifelong interest in archetypes and symbols including his work as a military cryptographer and his enduring fascination with ancient Greek mythology. Furthermore, I provide evidence of his father’s influence in his later formation of masculinity and other social relationships in the manifestation of his artistic style. Twombly’s abstract interpretation of scenes from Homer’s Iliad and the Trojan War is explored in the context of sociological themes of violence. The paper further connects concepts in Classical literature to the holistic narrative of the Iliam series, discussing themes of violence, masculinity, and identity. Finally, scientific and biological concepts of perception and preference offer a nuanced perspective into the field of art history and the analysis of Cy Twombly.

Cook, Andrew

Institution: *MA - Bridgewater State University*

Discipline: Political Science

Author/Contributors:
Andrew Cook

Abstract Name: **How Human Capital Flight Impacts Greece?s Economy**

This paper examines how human capital flight has impacted Greece's economy in the aftermath of the 2008 Global Financial Crisis. Human capital flight is the emigration of skilled workers from a less developed country to a more developed country. Greece has been unable to recover from the 2008 Financial Crisis which has caused the emigration of skilled workers to seek employment in other countries. Current research on Greece's human capital flight, however, does not focus on the time period of the post 2008 Global Financial Crisis. This research attempts to analyze what reasoning skilled workers have to emigrate from, such as the oppressive government, lack of opportunity, and lower wages. It investigates how the emigration of skilled workers has caused a population decline with a higher percentage of elderly citizens. This research consists of reviewing scholarly journals, books, and raw data provided by the United Nations, World Bank, etc. to decipher how emigration impacts Greece's economy. Raw data is analyzed including age, birth rate, net migration rate, GDP composition, GDP growth rate, GDP per capita, industrial production growth rate, labor force, and unemployment rate. This research will be beneficial to these countries to further understand why human capital flight occurs, and how it affects their declining population. Human capital flight's effects on the population decline of less developed countries is detrimental to their growth, and this study could help prevent this. This research will not only be applicable to these countries, but for the growing number of countries worldwide that are also experiencing human capital flight.

Cooke, Katie

Institution: *TN - Belmont University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kathryn Cooke,
Jordyn Wilcox,
Hannah Potts

Abstract Name: **Investigating the Role of Acute High Levels of Vitamin D on Autism Spectrum Disorder-Associated Behaviors in Rats**

Vitamin D is essential to facilitating and maintaining healthy brain function, in part through regulating dopaminergic neuron differentiation and influencing the synthesis and metabolism of dopamine. Disrupted signaling in the dopaminergic system can lead to the presence of behaviors associated with autism spectrum disorder (ASD), a neurodevelopmental disorder characterized by deficits in social communication and the presence of restricted interests and repetitive behaviors. To further investigate the role of Vitamin D in modulating dopamine neurotransmission, our project administered acute high levels of vitamin D and evaluated the presence of ASD-associated behaviors in rats. Rats received treatment of 2 mg/kg of vitamin D or control (corn oil) by oral gavage for three days prior to behavioral testing. Thirty minutes prior to testing, half of the rats from each vitamin D treatment group were injected with 10 mg/kg of a dopamine reuptake inhibitor (GBR 12909) or saline control. Total activity was assessed, followed by a social preference task, a marble-burying task, and a nest-building task to evaluate the presence and severity of ASD- and ADHD-associated behaviors, respectively. The current study focused on ASD-associated behaviors, and we hypothesized that rats given an acute high dose of vitamin D will show differences in ASD-associated behaviors compared to rats that received vehicle when the dopaminergic system is probed by administration of a dopamine transporter (DAT) inhibitor (GBR 12909). Results showed no significant differences between the treatment groups in the social preference and marble burying tasks. However, when separated by sex, male and female rats reacted differently to vitamin D as well as GBR 12909. Future research aims to add power to this study to further investigate the relationship between vitamin D and ASD-associated behaviors.

Cool, Allison

Institution: *FL - Palm Beach Atlantic University*

Discipline: Nursing/Health Science

Author/Contributors:
Allison Cool *Cidya Grant, Ph.D.* *Christopher J. Hickey, Ph.D.*

Abstract Name: **Targeting the TRPM8 Receptor: The Gateway for Anti-Cancer Properties Associated with Carvacrol - A Plant-Derived Bioactive Molecule**

Plant-derived extracts and essential oils have been known for millennia to have therapeutic value for the treatment of various human maladies. Previously, we demonstrated the bioactive molecule in oregano known as carvacrol decreases proliferation for the TRPM8+ cancer cell line A375 (melanoma) and increases proliferation for the TRPM8+ non-cancerous epithelial cell line BEAS-2B. To further examine the role that TRPM8 has in mediating these cellular responses, exogenous small interfering RNA (siRNA) oligonucleotides were used to target and silence TRPM8 expression in both A375 and BEAS-2B. Non-targeting siRNA (scramble) was used in parallel as a negative control during the transfections. Following transfection, Western blot methods confirmed the knockdown of TRPM8 expression. Next, the transfected cells were treated with carvacrol (0 μM and 125 μM) over 72 hours. As expected, the non-targeting siRNA transfected cells showed a response to the carvacrol treatments by displaying a reduction in cellular proliferation among the A375 cells and an increase in proliferation among the BEAS-2B cells. Similar results were obtained using biochemical proliferation assays which revealed a decrease in proliferation (A375) and an increase in proliferation (BEAS-2B). More notably, these cellular proliferation responses to carvacrol were absent following the knockdown of TRPM8. Finally, programmed cell death was assessed using apoptosis activity assays. As expected, the non-targeting siRNA transfections followed by carvacrol treatments showed an increase of apoptotic activity for A375 and was absent for the non-cancerous cells, both in agreement with our proliferation data. In contrast, when TRPM8 expression was silenced the carvacrol treatments did not significantly increase the A375 apoptotic activity. Taken together, we show the TRPM8 receptor mediates the cellular responses elicited by carvacrol and serves as the gateway for this novel treatment option intended for skin cancer patients. These observations have clinical applications in the areas of diagnostics and treatments for skin cancer.

Cooper, Gavin

Institution: *AR - Arkansas State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Gavin Cooper

Abstract Name: **Android Malware Detection using Opcode on Machine Learning**

As the number of Android devices increases, so does the probability of downloading an application that contains malware. This is a serious issue as malware could potentially harm the device, or, even worse, harvest sensitive data from the user. To prevent this issue, a method for quickly and accurately determining if an application contains malware would be very beneficial which is what this research attempts to do. For this study, a large collection of APK files is obtained, half of which contain malware. In order to make features using opcode, each file is disassembled using a disassembler called Baksmali. The first byte of every instruction in every file is extracted and used to generate intermediate files. These intermediate files are used to create a set of 10-gram opcode to allow for the analysis of commonly occurring sequences. The desired number of files is selected, and the frequency of every line across the selected files is calculated. The top N sequences are selected and used to determine the frequency of each sequence in every file. Two CSV files, one for malware and one for benign files, are created to store the frequency of each feature within every 10-gram opcode. The files are fed into various machine learning models, such as SVM, 5-NN, CART, Random Forest, and XGboost, to find a highly accurate model. These steps are repeated with a variable number of files and selected features to determine what directly impacts the accuracy. The experimental results show that using large number files with a small number of features along with a Random Forest model generates the highest accuracy, where the highest recorded accuracy was 87.31% with 800 files and 500 features. This work demonstrates the capacity to identify malware efficiently by utilizing features developed with minimum procedures.

Cooper, Scott

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: FAN Abstract

Author/Contributors:
Catherine Chan *Jessica Schuld* *Scott Cooper*
Julie Dresen *Cheri Barta*

Abstract Name: **The Wisconsin Council on Undergraduate Research: Working Together to Promote and Support Undergraduate Research, Scholarly and Creative Activities**

Undergraduate research, scholarly, and creative activities (URSCA) have a long history in the University of Wisconsin System (UWS). Since 1999, various system campuses have hosted the UW System Symposium, an annual gathering modeled after the National Conference on Undergraduate Research. It brings together undergraduate researchers, their mentors, and program coordinators to showcase the accomplishments of and celebrate URSCA. With the support of a National Science Foundation grant awarded to the Council on Undergraduate Research to institutionalize undergraduate research at the system/consortium level, the Wisconsin Council on Undergraduate Research (WisCUR) was formally launched in 2013.The group initially consisted of URSCA program leaders and advocates from UWS institutions. Recently, its membership expanded to include private universities and technical colleges in Wisconsin. Its mission is to provide leadership to advance, enhance, and expand URSCA across the UWS and beyond in order to prepare graduates who can adapt and innovate for the challenges of the future. Since the inception of WisCUR, URSCA programs within the WisCUR network have made great strides. For example, three UWS schools (UW-Eau Claire, UW-La Crosse, and UW-Milwaukee) have won the Campus-Wide Award for Undergraduate Research Accomplishments (AURA). No other state system has received the honor of receiving multiple AURA awards. Partly due to its involvement with WisCUR, Concordia University developed an undergraduate research certificate program and Madison College created an undergraduate research program.Wisconsin higher education institutions have also faced a variety of challenges that require innovations and adaptations, and WisCUR has served as a resource and support in this area. In this presentation, we will share the organization and goals of WisCUR, typical activities (beyond UWS Symposium) we sponsor, and benefits of WisCUR to individual institutions and staff therein. We will provide suggestions on how to organize similar URSCA groups and invite attendees to share their experiences.

Cope, Logan

Institution: *CA - University of the Pacific*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Logan Cope *Savannah Pierce* *Joseph Harrison*
Skylar Carlson

Abstract Name: **Isolation and identification of cyanobacterial secondary metabolites responsible for increased ubiquitin transfer**

Ubiquitination is a post-translational modification that is fundamental to most biological processes in Eukaryotes. Ubiquitin conjugation is controlled by an enzymatic cascade that comprises of the E1 (Ubiquitin-activating), E2 (Ubiquitin-conjugating), and E3 (Ubiquitin ligases) enzymes. Ubiquitination controls many cellular processes, such as DNA repair and apoptosis, but its key role is targeting proteins to the proteasome for degradation and this function is critical for normal cellular functions. Therefore, dysregulation of this process can lead to many diseases, like cancer, developmental, and neurodegenerative disease. Accordingly, discovery of small molecules that can modulate this pathway would enhance our understanding of this important pathway and could represent new therapeutic approaches for a variety of diseases.Since Prokaryotes lack ubiquitin conjugation machinery, we sought out to identify new molecules that could regulate the ubiquitin pathway. We screened crude fractionated libraries of compounds sourced from the marine cyanobacteria Rivularia spp. using in vitro ubiquitination assays. We observed that a middle range polarity fraction of the Rivularia spp. increased both substrate and auto-ubiquitination activities for several different E3s. This included UHRF1, a RING E3 ubiquitin ligase that controls DNA methylation, and IAP2, a protein that controls apoptosis. Additionally, we observed an increase in E2~Ub formed by E1 indicating that the compound was impacting steps upstream of the E3. Following our experiments, further fractionation of one of the active fractions was performed to simplify the complexity of the mixture. We are currently trying to identify the compound' structure using NMR and mass spectrometry along with determining what precise steps by which the small molecule increases ubiquitination activity.

Cordell, Chloe

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Lesley Mayne *Karsten Powell* *Chloe Cordell*
Kaelyn Isaacson

Abstract Name: **Communication Ability Profile for Employees and Employers**

The purpose of this study is to analyze the development of the Communication Ability Profile for Employees and Employers (CAPE) as a tool that may help potential employees with a disability detail how they communicate and advocate for the ways employers and co-workers should communicate with them in the workplace. The CAPE details an overview of the employee's communication strengths, workplace qualities, communication modalities, accommodations, and beneficial ways to connect with fellow employees. According to the U.S. Bureau of Labor Statistics (2020) in 2019, 19.3% of persons with disability were employed compared to 66.3 percent of people without a disability. While the labor market has improved, the degrees of improvement are lower for people with disabilities compared to people without disabilities. Furthermore, McNaughton and Arnold (2010) completed a metanalysis and found that the keys to success in employing people with disabilities include developing employee knowledge and skills that are valued in the workplace, matching the skills and interests of the individuals who use AAC, and continue to maintain and ensure needs are met for each employee to be successful. Participants for this IRB-approved study were recruited through an emailed script, the CAPE protocol, and a Qualtrics survey link sent to 16 potential participants of which nine subjects consented and completed the survey. An analysis of the data from the study of the CAPE will inform a final version of the protocol. This data will allow us to accurately reflect on the best ways to inform the protocol to foster successful communication in the workplace for people with disabilities. Furthermore, through analyzing and shaping the CAPE we hope to answer how the CAPE identifies communication strengths and needs compared to a traditional employment application form and how participants' perspectives of benefits and recommendations vary across parent and professional disciplines.

Corder, Alyssa

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Alyssa Corder,
Ilka Malin,
Tia Ravara,
Chelsea Ortiz-Jimenez,
Jennifer Smith

Abstract Name: **Caught on camera: Are humans a safety cue for mammalian vertebrates?**

Anthropogenic pressures are imposing environmental modifications at unprecedented spatial and temporal scales to drive ecological change. One provocative notion is that fear of humans (so called "super-predators") in human-altered landscapes may substitute for predation pressures that were historically imposed by large mammalian carnivores. This project addresses the question of whether free-living mammals actively avoid or are attracted to human presence over space and time. We examined the impact of human activities on the assemblages of free-living mammals as part of a long-term behavioral ecology study at Briones Regional Park in California. Specifically, we characterized the presence of humans, their dogs, and native vertebrates by analyzing thousands of photos from automated-camera traps (e.g., trail cams deployed over the past several years). We tagged photos of coyotes, bobcats, deer, skunks, and ground squirrels using the image software organizer "digiKam" and analyzed the data using the R statistical package "camtrapR." We report on variation in the visitation rates by mammals across space and time to uncover the interrelationships among multiple species within the park. Our data set documents the crepuscular activities of carnivorans (e.g., bobcats, coyotes, skunks) and offers insights into the potential effects of visitation by humans (and dogs) on the lives of these elusive mammals. This information about the activity schedule of these animals offers key insights into the behavioral ecology of these animals as well as useful information for wildlife managers as burgeoning human populations visit natural areas.

Cordero, Jack

Institution: *MA - Northeastern University*

Discipline: **Business**

Author/Contributors:
Jack Cordero *Sheila Puffer* *David Wesley*,
Alexandra Roth *Elizabeth Moore*

Abstract Name: **Strategic Responses to Global Governance: Sustainability in the International Construction Industry**

The international construction industry has a profound impact on the lives of nearly every person around the globe. Despite this universal presence, the industry has a reputation for unsustainable practices, corruption, and negligence. In response to increasing pressure from NGOs, IGOs, and INGOs to counteract the negative dimensions of the industry, many construction firms have implemented ESG and sustainability policies. This research project quantifies the sustainability initiatives of construction firms across the globe to uncover trends in this ever-evolving industry. The database constructed to analyze this information contains 240 companies located in thirty-one countries across six continents. This study aims to determine if any country level factors are associated with firms acting as positive corporate citizens in an industry ecosystem that contains numerous actors engaged in unsustainable and unethical practices. All of the data points used to quantify these initiatives are classified into two main categories: country factors and company factors. At the country level, data points from sources like the United Nations Development Program and Transparency International are integrated to analyze the overall macro conditions in the home country of the listed firms. At the company level, firms are analyzed using numerous theoretical frameworks. One of the core frameworks within the dataset is the 4Cs of MNEs, developed by Puffer et al. which classifies firms into four archetypes based on their relationship across two dimensions (proactive vs. reactive and collaborative vs. combative) with global governance organizations. Additionally, firms are categorized in the Stages of Corporate Citizenship framework created by Mirvis and Googins. Companies are also awarded a score based on their relationship with the United Nations Sustainable Development Goals and Global Compact.

Cordes, Julia

Institution: *MN - St. Olaf College*

Discipline: **Education**

Author/Contributors:
Julia Cordes,
Manal Zaman,
Cheng Vang

Abstract Name: **Examining the St. Olaf First Year Experience**

In the fall of the 2022-2023 school year, St. Olaf College implemented a new First Year Experience (FYE) program. This new program consists of a revamped New Student Orientation (NSO), biweekly St. Olaf Orientation to Academics and Resources (SOAR) programs, and a seminar and writing course requirement, in an attempt to improve first year student satisfaction and success. In order to measure satisfaction and success, we compared data from NSO surveys, SOAR feedback surveys, the St. Olaf Learning Goals Questionnaire (LGQ), and the National Survey of Student Engagement (NSSE), in addition to general retention and student grade information, from this academic year, to similar data collected in previous years. We conducted exploratory data analyses which indicated clear correlations between student satisfaction and the timing of various portions of the FYE program. We then compared summary statistics and ran statistical tests to quantify and validate the trends in our data. These tests and observations indicated significant improvements in satisfaction and success that may be attributed to the new FYE program, such as improved performance on the LGQ in areas corresponding to required seminar content, and increased senses of belonging and connection among students following the week of Student Orientation. However, our work also highlights some aspects of the program with little to no impact on satisfaction or success, such as a majority of required biweekly SOAR sessions. Based on our results, recommendations will be made to St. Olaf College in order to revise and alter the FYE program for future incoming students.

Coric, Lamija

Institution: *WI - University of Wisconsin-Parkside*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Lamija Coric,
Elaine M. Dandan

Abstract Name: **Characterizing the effect of nucleoside transport and metabolism on the response of Escherichia coli to glucose-phosphate stress**

All organisms need to be able to sense and respond to stress. In bacteria such as Escherichia coli, glucose-phosphate stress is caused by a block in glycolysis, resulting in growth inhibition and intracellular accumulation of sugar-phosphates. E. coli responds to this stress in part through the actions of the small RNA SgrS, which is expressed specifically during stress and blocks uptake of stressor sugar-phosphates. While this regulatory response is well understood, less is known about metabolic pathways that provide alternative carbon sources to bypass the glycolytic block. Previous research supports the notion that nucleoside transport and metabolism likely provide these carbon sources. For example, deleting nucleoside genes results in a growth defect during stress. Here, we characterize the effect of nucleoside genes on induction of the glucose-phosphate stress response, as measured by expression of a PsgrS-lacZ transcriptional fusion. Deleting deoD, which encodes a phosphorylase that cleaves the sugar from nucleosides for use as a carbon source, increases stress response induction. In contrast, deleting other nucleoside phosphorylase genes such as ppnP does not affect induction. Similarly, deleting nupG, which encodes a transporter that brings nucleosides into the cell, does not affect expression. As a whole, these results suggest that DeoD is a key player in the recovery from stress. Current research is focused on how other nucleoside transport and metabolism genes affect the response to glucose-phosphate stress.

Corona, Victoria

Institution: *TX - Texas A&M University - Kingsville*

Discipline: **Music**

Author/Contributors:
Victoria Corona

Abstract Name: **Composer Diversity in Solo Vocal Repertoire Assignments**

Throughout history, female composers have been overlooked in favor of their male counterparts to a great degree. By ignoring female composers' contributions, the male dominance in representation in vocal literature continues without correction. Even with plentiful composed selections by females, educators remain close-minded when choosing vocal solos for their students. This paper aims to state the issue of how limited music educators are in assigning repertoire and offer suggestions that can diversify the repertoire being assigned. This paper will demonstrate the lack of female composers represented in the most commonly published vocal anthology books and vocal solo competition repertoire lists in Texas. Throughout the paper, I will be including discussions with distinguished voice teachers and significant people at the forefront of vocal diversity research. I will also be recommending art songs composed by women for high school and college singers that can function just as well as the traditional male-dominant selections. Results show that female compositions are woefully discounted in the NATS competition list, 38 published anthology books, and the list of vocal piece selections for all 3 classes on the UIL PML list.

Corona Acosta, Jose

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Elias Webb, *Sam Denzine*, *Jose Corona Acosta*, *Matt Lesch*, *Garth Davis*, *Lisa Burns*, *Kate Czekalski*, *Colton Gores*

Abstract Name: Flexible Finger Design for Robotic Gripper

In industry, the safety and productivity of collaborative robots make them a vital part of many pick and place applications in production. Collaborative robots offer many advantages including their flexibility. In keeping with the advantages of collaborative robots, this flexibility should be extended to the grippers and fingers to reflect human-like dexterity. Flexible fingers have several advantages over traditional, rigid grippers. Adaptive fingers can pick and place a much broader array of oddly shaped objects than traditional grippers. Flexible fingers are also advantageous when working with fragile objects, such as produce, as the gripping force can be distributed by the flexing of the finger.The purpose of this project was to design, optimize, build and evaluate flexible fingers which can be mounted to a Schunk gripper on the end of a Fanuc collaborative robotic arm. Flexible fingers were designed in SolidWorks to integrate with the robotic gripper assembly. By testing prototypes, aspects were identified to improve the flexibility and functionality of the gripper. Using DOE (Design of Experiment) as an optimization strategy, the effects of each variable such as material, wall thickness, infill, etc. was studied. Mechanical simulators were used to isolate and test these variables to see their effects on the system with realistic situational constraints.The manufacturing of the flexible fingers consisted of using SLA and FDM printing to test, compare, and combine the more promising features into a robust finished product, capable of gripping and lifting various objects.Using technologies such as CAD, additive manufacturing, and agile engineering methodologies; it was possible to accomplish the design process and optimize the finger design in a collaborative manner.

Corrigall, Jordan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Public Health

Author/Contributors:
Danielle Zahn, *Jordan Corrigall*, *Trinity Wilson*

Abstract Name: CO2 Ventilation Testing and Air Purifier Installation to Reduce COVID Risk at NCUR

Containing and minimizing the spread of COVID-19 remains a concern for educational institutions like UW-Eau Claire, where students have returned to in-person classes and large educational conferences have resumed. The growing number of communicable disease outbreaks in recent decades have increased the need for innovative tools to predict and lessen their impact, especially in large gatherings like the 2023 National Conference of Undergraduate Research (NCUR). COVID-19 is transmitted through aerosolized respiratory particles and inadequate ventilation allows these aerosolized particles to build up in closed, indoor spaces. Filtration physically removes pathogens from a space and ventilation dilutes the concentration of infectious aerosolized particles, limiting the risk of disease transmission [1]. To maximize the safety of all NCUR participants, CO2 testing was thoroughly conducted in 64 rooms in 8 different campus buildings with a capacity of 3,024 people to evaluate ventilation and risk of COVID-19 transmission. Following CO2 measurements for a 48-hour period, air purifiers were installed in rooms exceeding a standard of 800 parts per million (ppm) of CO2 to protect NCUR participant health.

Corrigall, Jordan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Public Health**

Author/Contributors:
Oksana Laura Horstman,
Ethan Ahlbrecht,
Trinity Wilson,
Danielle Zahn

Abstract Name: **Investigation of Ventilation and Air Quality in Classrooms**

The transmission of the coronavirus can be greatly impacted by indoor ventilation and air purifiers according to the U.S. Environmental Protection Agency and other public and private institutions and researchers. The concentration of aerosols in the air that contain the virus can be reduced by proper ventilation systems, which circulate and filter the air for increased quality. Aerosols with a diameter of 2.5µm or lessare a possible carrier of SARS-CoV-2. PM 2.5 pollution may also increase the cellular expression of ACE2, associated with greater viral susceptibility. Ventilation to reduce PM 2.5 levels addresses both risks. Tests using incense as an indicator before, during, and after burning were used to see how quickly the ventilation in the rooms was able to remove excess PM 2.5. A calibrated DustTrak II monitor was used to record particulate matter, then Honeywell HEPA air purifiers were emplaced to see if further purification would aid in ventilation compared to only an HVAC system. Room air exchange rates (ACH, hr-1) were calculated using a spreadsheet by Jimenez at UC-Boulder. ACH rates in a small (15 person) meeting room were 5.88 hr-1 with HVAC alone and 16 hr-1 with two added air purifiers. Corresponding rates in an average (35 person) classroom were 9.62 hr-1 and 12.0 hr-1 with a single purifier. In this case, HVAC and air purifier coverage was 1.25–2.72 times as efficient as just HVAC coverage. Results for local weightlifting rooms are currently being investigated and will be included. A limitation of this research was the occasional pooling of incense smoke near the opening of the air monitor leading to a temporary spike in PM 2.5 levels. Use offans can address this issue. HEPA air purifiers reduce PM 2.5 levels and in turn may help lessen transmission risk of SARS-CoV-2 aerosols and airborne viruses

Cortes, Bryan

Institution: *CA - California State University - Fullerton*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Lyba Batla,
Bryan Cortes,
Justin Bui,
Aditya Shah

Abstract Name: **Targeted Messaging about Food Storage in Social Media Posts**

Food waste is a major problem in the United States and around the globe. In the U.S alone, avoidable food waste exceeds 55 million metric tonnes per year, nearly 29% of annual production and it has been estimated that this waste produces life-cycle greenhouse gas emissions of at least 113 million metric tonnes of CO2 annually, equivalent to 2% of national emissions. Food waste by end consumers occurs for many reasons, including food being prepared and stored incorrectly, and misunderstandings of the “best by” date on foods. Food-related messaging is widespread on social media, with users posting comments and photographs of foods that they are preparing or enjoying. These messages are then viewed by millions of users. Targeted responses to such messages could correct some misconceptions and therefore reduce food waste. The main technical challenges for creating targeted messages are identifying food-related posts and automatically generating a relevant response. We have developed an approach that uses machine learning to identify if a social media post mentions specific foods. The approach is able to detect food entities in Twitter posts with a precision and recall of 0.8. This approach was also applied to identify foods in photographs posted on Instagram using object recognition in images algorithms. If a post is identified as likely to be about a specific food, a short message with information such as storing tips and methods to prepare that food is generated. We use the FoodKeeper dataset published by the U.S. Department of Agriculture which contains descriptions of foods and their storage methods to generate targeted responses. This approach could therefore be used as a tool for more targeted and real-time messaging of information related to food and potentially help reduce food waste by end consumers

Cortney, Gordon

Institution: ***PA - Duquesne University***

Discipline: **Music**

Author/Contributors:
Gordon Cortney

Abstract Name: **From Gyil Music to Dog Meat: a Gastromusicological Autoethnography of Traditional Dagara Culture**

The Dagara people, located primarily in the Upper West region of Ghana, take pride in their careful preservation of traditional customs, amidst years of brutal colonization and ethnocide, not to mention the pervasive influence of surrounding peoples. Previous ethnomusicological research has recognized the gyil, a Ghanaian xylophone, as the focal point of Dagara society, noting how it interacts with and is inherent in all aspects of their culture. In June and July 2022, I spent approximately three weeks studying gyil repertoire at the Dagara Music Center, located in Medie, Ghana, a small town north of Accra. I participated in local Dagara traditions- attending a funeral, church celebration, and large weekend parties- all the while observing how gyil music-making is deeply connected to food and drink culture. Reflecting on these experiences through an autoethnographic discussion, I examine the gyil through the lens of gastronomy. In this study, I analyze the gyil's role in the following distinct experiences: consuming dog meat following a traditional Dagara funeral, drinking pito during weekend social gatherings, and eating some variation of saab almost every evening for dinner. My presentation will include some live demonstrations on the gyil, in order to connect the music with the anecdotes I discuss. Food and drink, paired with gyil music, is meant to be shared with company, encouraging solidarity while simultaneously resisting outside influence. Through this study, I argue that these collective activities transmit traditions across generations, thus strengthening the community. My gyil instructor Jerome Balsab told me once that "if the gyil has died, Dagara itself has died." I build on his view by showing how the acts of eating, drinking, playing, and listening sustain Dagara culture as a whole.

Coss, Jenna

Institution: ***WI - Alverno College***

Discipline: **FAN Abstract**

Author/Contributors:
Jenna Coss *Eulandria Biddle* *Lauralee Guilbault*
Megan Krueger

Abstract Name: **Pipeline to Success through Research and Community Connections for Underrepresented Women in STEM Majors**

Alverno College is the first Hispanic serving institution in Wisconsin with programs aimed to increase the population of STEM majors from underrepresented communities. In 2011, a pipeline was created with the Girls' Academy of Science and Mathematics program (GA) where high school girls work with the Natural Sciences, Mathematics, and Technology division (NSMT) faculty on Friday nights to participate in STEM activities, which encourages them to apply for undergraduate STEM programs. Since 2018, NSMT has increased its capacity to provide STEM undergraduates with on-campus summer research opportunities. Traditionally, these programs are designed for upper level students; however, Alverno's program is open to students of all grade levels. The main goal is to increase student self-efficacy in the laboratory, connect scientific research to the local community, and increase persistence in STEM majors. Alverno and the Milwaukee Riverkeeper has established a partnership in efforts to make a community-based connection and assist in water analyses researched each summer. Beginning-level students conduct water sample collection, analyses, and hypothesis building using chemistry and biology methods over a six week program. Upper-level students conduct more advanced water chemistry analyses, microbiological, and molecular biology research over eight weeks. Students attend weekly laboratory meetings and professional development sessions to learn about STEM careers, research/internship opportunities, and receive academic advising.GA has served over 730 students. The majority of participants are girls of color (96%) and those who qualify for free or reduced lunch (98%). Each year approximately 18-20 girls matriculate from GA to Alverno with about half majoring in STEM. The summer research program has supported 73 researchers (56 unique students), 65% who identify as women of color with a 95% persistence rate. A common themed found was an increase in personal identity as a scientist (self-efficacy). Furthermore, 54% of 2021 summer researchers applied for off-campus research opportunities.

Coursey, Cooper

Institution: *WV - West Virginia University*

Discipline: Biology

Author/Contributors:
Cooper Coursey,
Dr. James Kotcon

Abstract Name: **Evaluation of Nematophagous Fungi Capture Efficiency and Immobilization of Parasitic Nematodes**

Nematodes are a numerous component of the world's ecosystems. Being some of the most abundant organisms on the planet, many play a parasitic role toward plants and animals. However, parasites known as Xiphinema and Pratylenchus or the dagger nematode and the lesion nematode are genuses of parasitic plant roundworm that prioritizes and negatively impact the vascular and root tissues of plant species. Our project examined the rates in which isolates of nematophagous fungi could capture and immobilize various plant-parasitic nematodes. The fungal genera used include the net-forming Arthrobotrys oligospora, and constricting hyphae loop Dactylaria. These fungi were isolated from field soils and cultivated on various agar media. Microscope slides were coated with cornmeal agar (CMA+), water agar (WA+urea), and potato dextrose agar (PDA+), to evaluate their trapping efficiency against the plant-parasitic nematodes Pratylenchus scrbneri, and Xiphinema.

Cowart, Mace

Institution: *TX - Southern Methodist University*

Discipline: Theatre and Dance

Author/Contributors:
Mace Cowart

Abstract Name: **Gender Conditioning and Performance**

Gender Conditioning and Performance is a theatre approach that challenges the relevance of maintaining a gender binary onstage. Actors are praised for playing villains and murderers, knowing that the actors themselves is not dangerous people. What keeps us from embracing transgender and non-binary actors in the same way we love cis-gender actors? Can we allow actors to play characters whose gender is different from actors' own gender? This is examined through the relationship between actor, character, and gender. My research deepens the understanding of gender in theatre performances through the use of somatic theatre practices. Somatic practices decrease the possibility of self assumptions and increase true, physical impulses, leading to genuine exploration of the actor and their relationship to gender. As a transgender actor, I experience the fluctating relationship with character body and personal body everyday. However, an actor does not have to be transgender to experience physical disconnect in this way. Instead of viewing this conflict as something that inhibits the actor, my work turns it into an actors power. We can encourage theatre artists to use the stage as a space to explore the gender of both performer and character. The key to this exploration is connecting to our bodies. Through engagement with the Ohad Naharin's Gaga movement, gender studies, and theatre practices, this research investigates the power of the gender binary, what holds it together, and what can break it apart.

Cowen, Matthew

Institution: *CA - University of the Pacific*

Discipline: Mathematics

Author/Contributors:
Matthew Cowen

Abstract Name: **Induced Forests and Pseudoforests in Planar Graphs**

The four color theorem is one of the most famous theorems in the field of graph theory, and is a theorem that one encounters without even realizing it when they look at a map. The theorem states that no more than four colors are needed to color the regions of a map such that no two regions that are adjacent share the same color. Despite its fame, this theorem is incredibly difficult to prove, and is the first major theorem in mathematics proven using a computer, and as such its proof is rejected by many mathematicians, although it has repeatedly been shown to hold true. We consider the following conjecture regarding induced forests in planar graphs, stating that in any planar graph G, there exists an induced forest containing at least half of the vertices of G. If this conjecture holds true, then it would in turn provide a proof of the four color theorem. This conjecture has already been shown to hold true for outerplanar graphs and triangle-free graphs. We prove that for any planar graph G with no edge adjacent triangles, such a graph may be partitioned into P1 and P2, where both are induced pseudoforests. We go on to show that for any planar graph G with triangles δ1, ..., δn, provided there exists at least one vertex in each δi with degree 2, then G may be partitioned into two induced forests. Finally, we prove that for planar graphs possessing a bounded number of triangles, there exists an induced forest on at least half of the vertices.

Cowie, Jess

Institution: *CO - University of Northern Colorado*

Discipline: Biology

Author/Contributors:
Hannah Wilson,
Jess Cowie,
Gregory DeKrey

Abstract Name: **Studying the effect of aryl hydrocarbon receptor activation on affinity maturation**

Oral immunization with protein antigens, such as cholera toxin, will result in production of antibodies by intestinal B cells. These antibodies can neutralize the toxin's ability to cause harm. Repeated immunization will increase the average affinity of toxin-specific antibodies over time, a process called affinity maturation. The aryl hydrocarbon receptor (AhR) acts as a sensor of friendly gut microbes and, in so doing, plays a role in moderating gut inflammation. Strong activation of the AhR by drugs and other chemicals can suppress B cell function and antibody responses, but those responses recover over time with repeated immunization. It is currently unknown if affinity maturation also recovers over time after strong AhR activation. To fill this gap in knowledge, we hypothesized that average antibody affinity would decrease over time with repeated immunization, in parallel with antibody levels, after strong AhR activation in mice. Because the AhR is a target for drug therapy to treat autoimmune disease, this work is important for understanding the potential implications of drug therapy.Based on the results of preliminary experiments, we were able to determine that antibody concentration increases as number of inoculations increase, providing a baseline knowledge necessary for future AhR activation experiments.

Cowley, Aidan

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Aidan Cowley

Abstract Name: Rhetoric and the First Amendment: UWL Student Perceptions Towards their Right to Free Speech on Campus

The Supreme Court of the United States has often addressed issues pertaining to the First Amendment right to free expression using the “marketplace of ideas” metaphor. Thismetaphor has been usedto condemn the use of government censorship for types of speech that do not surpass the protections of the First Amendment, allowing underrepresented communities to voice their opinions equally. The importance of Free Speech on any college campus is abundantly clear because of these reasons, and in order to fully exercise their rights, students should be aware of what and when certain kinds of speech are protected.Recent events on the University of Wisconsin La Crosse (UWL) campusmay have altered student perceptions towards the confines of their First Amendment rights. On April 26th, 2022, UWL School of Education students protested administrative issues by chalkingmessages directed at UWL faculty. These messages, which were described in an email as "obscene, lewd, [and] profane," were subsequently removed while other unrelated messages remained untouched. Other such issues with student speech have also arisen in recent months.My research seeks to gauge UWL student knowledge,perceptions, and expectationsregarding free speech in general as comparedto free speech on a college campus. This study appliesa mixed method and multi-staged approach to textual analysis and data collection. This includes analyzing the rhetoric of certain administrative communications (e.g., emails and policies) and how they affect students. Additionally, I amconducting a series of surveys, interviews, and focus groupsto better understand multiple student perspectives. Questionspertain to students'definitions of free speech and its limitationsin different situations and settings on campus. The results of this study will provide insight intohow the First Amendment is both perceived and applied on college campuses.

Cox, Mason

Institution: ***GA - Kennesaw State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mason Cox *Duy Pham* *Ben McKinney*
Jake Irvin *Ashish Aphale*

Abstract Name: Optimization of Metallic Interconnectors for Clean Energy Power Systems

The need to eliminate carbon emissions coupled with intensified energy demands have led to an intensified research and development activities in clean energy technology. Taking advantage of fuels such as green hydrogen, solid oxide fuel cells (SOFC) power systems can serve as a potential energy conversion system. SOFCs combine O2 from air and H2 gas to generate electricity, consequently producing water (H2O) as the only byproduct of the electrochemical reaction. SOFCs typically have an operational temperature in the range of 500-900C and generate electricity without the requirement of recharging, so long as the fuel is supplied. A single SOFC cell contains a porous cathode electrode where oxygen reduction reaction takes place (ORR), a porous anode electrode where hydrogen oxidation reaction (HOR) occurs. A dense electrolyte separates the anode and cathode, and an interconnect (IC) is placed on both electrodes that acts like a current collector. ICs are fabricated using chromia-forming alloys due to their high electrical conductivity and robust resistance to oxidation and corrosion. Oxidation of behavior of these alloys and their influence on the electrical property of oxide scales under complex SOFC operating atmosphere largely remains unknow. This experimental research work is focused on understanding the oxidation behavior of select commercial chromia and alumina forming IC alloys and study its effect on the area-specific resistance (ASR) under SOFC operating conditions. Experimental details regarding the measurement of resistivity at elevated temperatures and the calculated time and temperature-dependent ASR will be presented. Implications of oxidation and corrosion of alloys at high temperatures under complex gas atmosphere and their effect on the electric conductive pathway will be discussed. Applications of this research pertaining to transportation, residential and commercial systems in energy storage and conversion technologies will be presented.

Crabtree, Delanie

Institution: *PA - Moravian University*

Discipline: Biology

Author/Contributors:
Delanie Crabtree

Abstract Name: **The effects of an ecologically relevant level of malathion on the behavior and neurodevelopment of a model organism: Northern Leopard Frog tadpoles**

Malathion is a commonly used pesticide throughout the United States, often contaminating surrounding natural habitats. Vertebrates such as amphibians are exposed to these chemicals through run-off as non-target organisms. Although these contaminants are believed to be of acceptable levels, recent literature is questioning the safety of these chemical concentrations. However, how these conditions are affecting anurans is highly understudied. Concerns have been raised that amphibian populations have been massively decreasing during the past few decades. Malathion is an organophosphate, an irreversible acetylcholinesterase (AChE) inhibitor, which has been shown to cause nausea, seizures, and death at high concentrations in previous studies. Effects have been seen in tadpoles with other AChE inhibitors even at low, ecologically appropriate concentrations, however, the impact of low, environmentally relevant concentrations of malathion on neurodevelopment and behavior have never been tested. To explore the effects of malathion on vertebrates, Northern Leopard Frog tadpoles (Lithobates [Rana] pipiens) were used as a model organism and were exposed to either a vehicle control or to 1 µg/L of malathion for three weeks in a blind-controlled laboratory study. During the exposure period, interval behavior was taken weekly. After three weeks,post-treatment behavior assays were performed. The specimens were then euthanized and weighed. Standard body and brain morphology measurements were taken and analyzed. Results revealed significant changes in brain morphology of the medulla and the optic tectum, as well as changes in the behavior of boldness, body orientation, and activity between treatments. These changes show that these putatively safe levels of malathion can affect the behavior and neurodevelopment in tadpoles.

Craig, Genevieve

Institution: *PA - Lafayette College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Genevieve Craig,
Lizbeth Ramos,
Samuel Essig,
Henry Hallock <

Abstract Name: **Expression of the Apolipoprotein E (Apoe) Gene in the Murine Cingulate Cortex upon Activation of the Locus Coeruleus**

Apolipoprotein E (APOE in humans, written analogously asApoe in mice) is a gene that encodes for a protein involved in lipid transportation in the central nervous system. APOE allele variants are commonly associated with differences in Alzheimer's disease progression and severity, as well as attentional performance, in humans. Despite this knowledge, how APOE expression affects brain function during attention remains unclear. In mice, Apoe expression is increased in cortical tissue after synthetic activation of two brain regions that are associated with attention: The cingulate cortex (CC), and the locus coeruleus (LC). Deficits in attentional function associated with differences in activity in these brain regions are also implicated in neuropsychiatric disorders such as schizophrenia, attentional deficit hyperactivity disorder, and major depressive disorder. An understanding of which brain regions and cell types Apoe is expressed upon activation of the attentional circuit could inform treatment approaches for these disorders that target this molecule. Using a cohort of 24 mice (12 male and 12 female), we examined cell type-specific expression of Apoe in the CC following DREADD-mediated excitation of LC inputs. We performed viral injections, single-molecule fluorescence in situ hybridization, and subsequent analysis of gene expression to determine in which cell types (neurons vs. astrocytes, and glutamatergic neurons vs. inhibitory neurons) Apoe is expressed in the CC. The results from these experiments will yield insight into how Apoe expression affects function in cortical microcircuits that are important for attention-guided behavior.

Crary, Jordan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Jordan Crary *Dalete Mota* *Kaitlyn Bailey*
Jordan Dow

Abstract Name: **Recall and Adherence to Safety Precautions for Prevention of Secondary Exposure to Chemotherapy at Home**

Chemotherapies are used for cancer treatment and are frequently administered intravenously at outpatient clinics. Part of the chemotherapy is excreted by the patient still in its active form, potentially contaminating the home environment and those who live in the same household. Nurses and other oncology team members instruct cancer patients and caregivers about the risks associated with exposure to chemotherapy at home. The evidence is scarce about how much patients and caregivers recall about the instructions they receive and their adherence to them.This study aimed to investigate which instructions related to preventing exposure to chemotherapy residues patients and caregivers recall and follow at home.After IRB approval, a cross-sectional study was conducted. Patients and caregivers from an outpatient cancer clinic in the Midwest answered a two-part survey regarding ten different instructions commonly provided by oncology teams: the first part asked if they received instructions, and the second asked to what degree the instructions were followed. Descriptive statistics were performed.Twenty-one patients and their primary caregivers (dyads) responded to the survey either partially or in completion. Thirteen dyads (62%) reported receiving instructions from the nurse. Twenty dyads answered the first set of questions; one dyad (5%) recalled receiving all ten instructions, and five (25%) reported receiving no instructions. Dyads recalled receiving an average of 4 (43%) instructions. Fourteen dyads responded to the second set of questions; 2 (14%) reported always following instructions, while others (n=12; 86%) reported partially following or not following instructions.Considering the increased risk of exposure each time an instruction is not followed, results indicate the need for improving delivery instruction modes and emphasizing the importance of following instructions to reduce secondary exposure to chemotherapeutic agents. Results also highlight the importance of nurses' role in educating patients and caregivers about secondary exposure.

Crawford, Makala

Institution: *NC - Winston-Salem State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Maliyah Vannoy

Abstract Name: **Potential Molecular Probes from Derivatives of Diphenylpyraline for Cannabinoid Receptor**

Brain complexity regarding reward mechanisms has been studied for decades to uncover individual behavior related to motivation. Cannabinoid 1 receptors (CB1R) are located in the part of the psychoactive region of the brain and play a role in the reward system of psychostimulants. It has been shown that diphenylpyraline (DPP) and its analogs bind to CB1R. Hence, developing a CB1R selective probe could help provide more insights into brain reward mechanisms. To accomplish this, molecular modeling using Schrodinger software, synthesis, and biological testing using an iterative approach is being used to uncover the best compounds. Fortunately, the synthesis of most molecules is accomplished in under five steps depending on the method and optimization procedures are reported herein. The modeling leverages the protein data bank structure of CB1R. Molecular docking experiments performed on the CB1R structure (pdb 5TGZ) generated a five-point pharmacophore model for the binding of halogenated DPP analogs within the cannabinoid receptor. Calculated binding energies for the halogenated piperidyl analogs docked to CB1 agree with in vitro data, with fluorinated compounds having greater affinity than chlorinated compounds. This initial modeling informs a synthetic strategy where combinations of hydrophobicity and halogen additions on the phenyl rings may afford access to greater specificity and affinity for the respective protein targets. Optimization of these compounds using a pharmacophore approach could lead to greater specificity and affinity for the CB1 receptor. This rational approach to small molecule development has the potential to produce DPP analogs for use as novel molecular probes. In addition, toxicity studies conducted inform if the compound is suitable for animal models. Results from this iterative approach are reported herein.

Crawford, Makala

Institution: *NC - Winston-Salem State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Makala Crawford,
Ryan Fitzgerald,
Jill Keith

Abstract Name: **Synthesis of Diphenylpyraline Derivatives to Study the Inhibition of Dopamine Transport (DAT)**

Dopamine (DA) a neurotransmitter closely linked with reward, causes heightened euphoria when synaptic concentrations are higher than normal. The signaling of DA is controlled by the dopamine transporter (DAT). Our group is focused on synthesizing diphenylpyralines (DPP) to bind to DAT for the purposes of uncovering the best compund that can serve as a molecular probe for DAT. This probe will allow for further examination and clarification on the complexities of the brain. The use of the Schrodinger template for molecular modeling and drug discovery works by distinguishing between structure activity relationships to improve drug developemt, based on existing models. Schrodinger will assist us in uncovering the best DPP derivative to design a molecular probe for synthesis. Because Schrodinger followsLipinski's Rule of Five, the Schrodinger platform will guide us in designing compounds that can pass the blood-brain barrier, and in turn will promote the best design for synthsizing a molecular probe. These molecular probes have also been shown to bind to cannibanoid receptors strongly. Herein are the results.

Crenshaw, Rebecca

Institution: *TN - University of Memphis*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rebecca Crenshaw,
Jasmine DuMaine,
Deranda Lester, Ph.D.

Abstract Name: **EFFECTS OF ESTROUS CYCLE ON MESOLIMBIC DOPAMINE RELEASE IN MICE**

The mesolimbic dopamine system consists of cell bodies that extend from the ventral tegmental area to several limbic structures, including the nucleus accumbens (NAc). Dopamine transmission in the NAc is known to play a central role in the regulation of reward and motivation. Abnormal mesolimbic dopamine functioning has been associated with disorders such as substance use disorder, depression, ADHD, and schizophrenia. Many studies on NAc dopamine function have relied on data from only male rodents, with the concern of hormonal fluctuations being one reason to exclude female mice. The current study aimed to determine the effects of the female estrous cycle on several aspects of phasic dopamine release in the NAc of mice. Specifically, in vivo fixed potential amperometry with carbon fiber recording electrodes in the NAc was used to measure dopamine release, the synaptic half-life of dopamine, dopamine autoreceptor sensitivity, and the dopaminergic response to cocaine in anesthetized female C57BL/6J mice. Prior to dopamine recordings, vaginal lavages were performed. These samples were stained and examined under a light microscope to determine the estrous cycle phase for each mouse. The mouse estrous cycle is 4-5 days long and progresses through 4 phases: proestrus, estrus, metestrus, and diestrus. No differences were observed between estrous cycle phases on any of the measured variables, indicating that dopamine functioning was not affected by the estrous cycle of the mice. Although more research is needed, these data suggest that variability related to estrous cycles should not be an excluding factor for the experimental design of studies related to mesolimbic dopamine release.

Crews, Devon

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Devon Crews *Zach Yengo* *Karl Welbes*,
Connor Smith *Tanner Deist*

Abstract Name: Effect of Postural Variations on On-Task Behavior in a College Classroom Setting

Background/Study Purpose: Strategies to increase cognitive performance should be explored to increase increased attention during class in higher education. The purpose of this study was to examine the impact of sitting in a chair (traditional sitting), sitting on a physio-ball (physio-ball sitting), and standing in the classroom on on-task behavior (OTB) in undergraduate seniors. Methods: Sixteen college students, ages 20-21 years, rotated through three postures (two classes per posture) that were randomly assigned. The classes were observed for a 40-minute period, and OTB rating of 0 = “not on task” vs. 1 = “on task” was recorded 10 times (every four minutes) per class. Results: Average two-rater interrater reliability scores were 95.6% across the six data collection days. Each participant’s OTB scores were averaged between the two classes per posture. Percentages of perfect scores (scores of 10 out of 10) were calculated, and all postures had an “on-task” rate of greater than 90%. Physio-ball sitting had the lowest percentage of perfect scores. One-way repeated measures analysis of variance indicated a significant different in OTB across the three postures (.05). Post-hoc multiple comparisons using paired samples t-tests with an adjusted alpha of .0167 revealed significant difference in OTB between traditional sitting and physio-ball sitting (p = .005). There were no significant differences in OTB for traditional sitting vs. standing (p = .110) and for standing vs. physio-ball sitting (p = .351). Conclusions: Findings of the study suggest that physio-ball sitting may decrease OTB during class; however, the current sample demonstrated high overall OTB, possibly for being seniors enrolled in a course required by the major. It would be of interest to examine the impact of postural variations on OTB for a larger class size with a more diverse group of undergraduate students.

Criswell, Allyson

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Allyson Criswell ,
Maranda Tidwell,
Mary Kathryn Sewell-Loftin

Abstract Name: Expression of CD44 and SRC through Hyaluronan and Mechanical Stimuli

Ovarian cancer is the deadliest gynecological cancer, with it being the fifth leading cause of cancer related death in women and demonstrating less than a 50% 5-year survival rate (1). Research has displayed a correlation between hyaluronan (HA) in the tumor microenvironment (TME) and metastasis through its receptor, CD44 (2). In addition, SRC, a downstream protein in the CD44 pathway, is associated with cancer proliferation (3). We hypothesize that the addition of mechanical stimulus and either soluble (SOL) or plated (PLT) HA will alter (increase/decrease) the expression of CD44 within the microenvironment. Results indicated the interaction of HA and mechanical strain differentially regulates both CD44 and Src expression in OVCAR-8 cells. The shCD44 line might have expressed higher levels of CD44 due to a splice variant not being successfully knocked down. Further work will be done to isolate a consistent knockdown line. Further investigative studies will be done to study the impact of HA presentation and mechanical stimulus on OVCAR-8 cells in a 3D environment.

Cronin, Hayden

Institution: *IA - Luther College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Hayden Cronin,
Emma Pichelmann ,
Daniel Pfeffer-Kleemann

Abstract Name: **Heavy Metal Accumulation onto Sediments in Northeast Iowa**

Metal supplements are commonly added to hog feed to prevent post-weaning diarrhea and promote growth in piglets. The manure that is produced by the hogs is then injected into nearby fields, where leaching or erosion could cause metal loss to the watersheds. Metal cations transported in runoff could adsorb to surfaces of sediment particles, resulting in a change to the overall sediment composition and microbial communities. To determine if metal cations are adsorbing to sediment particles due to agricultural runoff, we quantified the metal composition of sediment samples from sites downstream of fields where hog manure is injected as well as controls in northeast Iowa. Measurements of acid-digested samples were done with ICP-OES and results were used to identify differences among sampling locations. These results can be used to understand the extent to which the addition of metals to animal feed has an effect on local environments.

Crosslin, Enerel

Institution: *SD - University of South Dakota*

Discipline: Economics

Author/Contributors:
Enerel Crosslin

Abstract Name: **How Narratives Hold the Small Towns of the Midwest in Economic and Population Stagnation**

This research seeks to provide insight into rural America's economic stagnation by examining reactions in rural and hybrid towns to incoming industries through the lens of narrative. "Narrative" refers to Patterson and Monroe's definition, "the ways in which we construct disparate facts in our own worlds and weave them together cognitively in order to make sense of our reality." Narrative's influence offers an alternative explanation to anti-migrant sentiment for Midwest towns' harsh rejection of certain industries.When examining instances of political reactions resulting from new industrial plants, it is not clear that unrest is a reaction to migrant workers. Industrial plants importing similar demographics of migrant workers cause a wide variety of reactions. Additionally, rural Americans view cities as hubs for anti-rural interest groups, yet the population of the rural Midwest is steadily diversifying. Thus, an alternative diagnosis for rural protectionism than racism or nationalism seems necessary. Investigation into these instances provides a strong case for newindustries' reliance on compatibility within the rural narrative to successfully integrate intothe rural Midwest.A focus on narrative uncovers a possible cause of rural Americas' falsely primitive image formulated within narrative-forming institutions such as schools, which commonly teach subjects such as history through a clear narrative structure. Schools demonstrate that narrative can be applied to the current processes of an individual or group of individuals' self-contextualization. This research seeks to diagnose the issue of economic stagnation and outmigration that faces Midwestern states as a symptom of self-perceptions of states by their populous as consisting of homogenously rural industries and lifestyles.

Crow, Atticus

Institution: *DC - American University*

Discipline: International Studies

Author/Contributors:
Atticus Crow

Abstract Name: **New Violence for a New Fight: The Modern Far Right's Expansion Into Combat Sports Subcultures**

White supremacists across the world are turning to mixed martial arts to prepare for what they believe is an impending race war. Since the late 2000s, far-right groups emerging from the neo-Nazi hooliganism and street fighting scene have founded combat sports gyms, promotions, and fight clubs across the United States, Canada, and Europe. This paper examines how two major groups, the Russian White Rex and the American Rise Above Movement, have weaponized and modernized traditional far-right discourses on masculinity and the body in order to amplify physical violence and increase their ability to recruit from fitness and combat sports subcultures. Members of this growing movement define themselves through white supremacist ideology and narratives, positioning themselves simultaneously as in constant danger of annihilation and as righteous, formidable warriors defending Western Civilization and a white Europe. The common perceived threat in these representations comes from increased immigration from North Africa and the Middle East, something that is often a part of broader antisemitic conspiracy theoriesabout Jewish people orchestrating the domination and destruction of the white race. Many of these groups have organized acts of racially and politically motivated violence, most notably when members of the Rise Above Movement coordinated to assault numerous counter protestors at the 2017 Unite the Right Rally in Charlottesville, Virginia. Understanding how the modern far right movement expands into new subcultures and becomes more violent is urgent, especially as recent scholarship highlights the growing threat these groups pose to governmental structures and democracy.

Crowe, Isaac

Institution: *MN - University of Minnesota - Rochester*

Discipline: Nursing/Health Science

Author/Contributors:
Isaac Crowe,
Brittany Brown,
Rachel Olson

Abstract Name: **Surveillance of local water sources for fecal contamination and prevalence of antibiotic resistant bacteria**

Authentic research is an effective tool to increase undergraduate students' interest and competency in a research career. Yet, not all undergraduate students are afforded the ability to participate in traditional research experiences. Course-based Undergraduate Research Experiences (CURE) offer students the opportunity to contribute to authentic and meaningful research endeavors while supporting course learning goals. Here, we aim to present our pedagogical approaches that support microbiological laboratory skill building while also contributing to the surveillance of our local environment. Rochester, MN has two lakes, two reservoirs, eight creeks or runs, and the Zumbro river that are used for recreational purposes. It is not unusual for the lakes to be closed temporarily due to testing positive for pathogenic microbes that exceed state guidelines. Surface water fecal pollution may introduce bacteria and bacteriophages into aquatic environments. Bacteriophages serve as indicators of fecal borne bacterial contamination. Antibiotics, antifungals, and genes that contribute to antibiotic resistance may be present in fecal waste, which may then contribute to antibiotic resistance of aquatic and soil-dwelling bacteria. Here we will present our pedagogical approaches and preliminary results of our aims which include 1) investigating local water sources for bacteriophage abundance and 2) surveillance of environmental soil samples for the prevalence of antibiotic resistant bacteria.

Crowell, Odyssey

Institution: *AL - University of Alabama at Birmingham*

Discipline: Sociology

Author/Contributors:
Odyssey Crowell

Abstract Name: **Young Black Mental Health In A COVID-19 Impacted South**

Young Black individuals experience stressors daily, and with the addition of COVID-19, young Blacks have been disproportionately affected. However, according to the mental health paradox even though Blacks experience the highest levels of daily stressors, the have the lowest number of mental health conditions. There is a current gap in the literature for young Black adults in the rural South, and the lack of research as to how daily stressors with the edition of pandemic stressors affected the Black population. Building on this, my research questions are as follows: 1) Among young people in the South, do those with more pandemic stressors have more mental health issues? 2) Is race a moderator in this association? To answer these research questions, the 2020 Household Pulse Survey (HPS) conducted by the U.S. Census Bureau was analyzed, specifically looking at dates April 23 through December 21, 2020. It was found that young Black adults in the South had the highest pandemic stressors in comparison to other racial groups. Among young people in the South, those with more pandemic stressors were found to experience more mental health issues. However, young Black adults were found to have the lowest anxiety and depression scores despite their high levels of stressors, supporting the mental health paradox. This study is significant because Blacks are disproportionately affected in the South. Addressing matters early on among young adults can lead to better health outcomes for Blacks in the future.

Cruciani, Maria

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Madelyn St.Pierre,
Dylan Baker,
Maria Cruciani

Abstract Name: **Introduction and Progression of Early Algebra in the Beast Academy Comprehensive Curriculum**

As students progress through elementary mathematics curricula, arithmetic is the main point of focus. However, a call for algebra to become a component of the elementary mathematics curriculum has gained momentum because implementing algebra in early elementary curricula increases student understanding of algebraic concepts and eases the transition to deductive algebra later in mathematics. The Beast Academy comprehensive curriculum was developed with a focus on problem solving through monster characters in a graphic novel who demonstrate different ways of mathematical thinking. Beast Academy incorporates problems where students engage with algebraic thinking earlier than suggested in the Common Core State Standards and continues to incorporate problems which emphasize algebraic thinking through practice problems in subsequent levels. This progression introduces students to algebraic language while enhancing their current learning. We are interested in the trajectory of problems which build algebraic thinking as well as problems in which students are doing algebra. We will present our findings on how this curriculum introduces algebra to students, and how current literature suggests this will impact student learning outcomes.

Cruz, Madison

Institution: *VA - Virginia Commonwealth University*

Discipline: Biology

Author/Contributors:
Madison Cruz *Lauren Moncayo* *Mohamad Imad Damaj*
Aslaan Siddiqi *Abdel-Rahman Dahman*

Abstract Name: **Evaluation of EtOH Abstinence in the Recovery of Neuropathic Evoked Behaviors in a Mouse Model of Alcohol-Induced Peripheral Neuropathy (AIPN)**

Chronic alcohol use can lead to alcohol-induced peripheral neuropathy (AIPN). The prevalence of AIPNamong patients with Alcohol Use Disorder (AUD) is 46.3%, with signs and symptoms in 44% of chronic users. Current treatments for AIPN lack clinical efficacy,therefore, physicians also encourage patients that alcohol abstinence will alleviate allodynia symptoms.Although several factors, such as duration of alcohol consumption and dose of EtOH, may contribute to the severity of AIPN, it remains unknown if abstinence will reverse neuropathic pain andcause severewithdrawal symptoms.This study tested the effects of alcohol abstinence on the recovery from neuropathic evoked behaviors in a mouse model of AIPN. Alcohol abstinence may reverse neuropathic evoked behaviors, mechanical and cold hypersensitivity, in a mouse model of AIPN. A total of 12 male C57BL/6J mice were fed Lieber-DeCarli liquid diets (0, 2.5, and 5%). Nesting, von Frey, acetone, nerve conduction, light-dark box, and somatic sign assays were conducted. Mechanical hypersensitivity developed after 7 days of chronic daily EtOH consumption in the 5% EtOH group. Chronic EtOH consumption induced multiple neuropathic behaviors, such as cold sensitivity and deficits in nesting. Increased neuropathic behaviors induced by chronic EtOH consumption and deficits in SNAP amplitude suggest the mice developed AIPN. After 5 weeks of EtOH consumption, mice underwent a two-week period of EtOH abstinence. Mice presented affective and somatic withdrawal signs, but mechanical and cold hypersensitivity were maintained. These results suggest that alcohol abstinence is not an effective therapy for reversingAIPN in mice and emphasize the need for novel pharmacological targets and treatments.

Cruz-Ruiz, Karen

Institution: *NC - Elon University*

Discipline: Public Health

Author/Contributors:
Karen Cruz-Ruiz *Amanda Tapler*

Abstract Name: **Through the Lens of Latinx/Hispanic Women: Reproductive and Maternal Experiences in the Piedmont-Triad Area.**

This study explored the decision making and experiences of Latinx/Hispanic women with regards to pregnancy, birth practices, labor and delivery, postpartum, and motherhood. Limited studies have specifically focused on the reproductive and maternal health experiences and decision-making of Latinx/Hispanic women. This qualitative, community-engaged research study provides an opportunity for young Latinx/Hispanic women to voice their reproductive and maternal experiences and the connections between their beliefs, culture, and perceptions. Participants were recruited through purposive, snowball sampling. Open-ended, semi-structured interviews were conducted with 15 Latinx/Hispanic women, aged 18-45, who gave birth between 2015-2022, and who reside in the Piedmont-Triad of North Carolina. The research team used the analytic technique, the iterative process of thematic analysis, coding and recoding, categorizing emergent patterns, and then aggregating patterns to develop thematic statements.In the sample dataset, four prominent themes, derived from the emergent categories and subcategories were found across all transcripts. All participants discussed: (1) individual, interpersonal, and structural factors that influenced their decision making; (2) the importance of support; (3) the impact of perceptions and experiences of Motherhood; and (4) their birthing experiences within the U.S. healthcare system. Ten participants stressed the importance of breastfeeding and the role this perception played in decision-making. Almost all participants described receiving either relational, financial, physical, or verbal support from a partner or family member. More than a third of participants reported engaging in cultural or traditional practices associated with birthing or motherhood. One participant stated,“during childbirth I followed the beliefs such as wearing a red ribbon with a key” while other participants described engaging in a 40-day quarantine or “cuarentena” postpartum. Additionaly, more than fiveparticipants noted fear regarding epidural use and its perceived long-term effects. These important findings contribute to the current research and to interventions that can improve maternal and reproductive care and experiences.

Cudd-Zamora, Terefech

Institution: *MN - Hamline University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Terefech Cudd-Zamora,
Jax Skye,
Joel Bruss,
Daniel Tranel

Abstract Name: **The road to depression: Lesion network mapping of depression over time**

Brain lesions are a type of damage within the brain typically due to disease or injury. Depression is a common concern for individuals who develop brain lesions, with prevalence for post-stroke depression being 25- 50% and prevalence for depression following a traumatic brain injury being 29-39%. Lesion-network mapping is a technique that allows you to identify neural networks likely to be functionally affected due to a lesion using normative connectivity data. While it's been shown that lesion network mapping can be a useful tool for identifying the risk of developing post-lesion depression in patients, it has not yet been established as to which assessment for depression is most accurate. Our aims were to first compare the lesion network maps of the Beck depression index (BDI) and the Geriatric depression scale (GDS), which are both assessments for depression, and second, to observe if depression and the associated neural networks change over time using the GDS.The lesion-network map using the BDI showed that the Ventral Attention Network was implicated. The maps using the GDS showed that the Frontoparietal Network was implicated at the 3 month period and the Ventrolateral Nucleus of the Thalamus was implicated at the 1 year period.Going forward, conducting a repeated measures experiment for the BDI and the GDS to observe any consistent performance as well as investigating why different networks are involved in different periods of depression recovery is needed.

Cuevas, Gisell

Institution: *CA - University of California - Merced*

Discipline: Sociology

Author/Contributors:
Gisell Cuevas

Abstract Name: **Are Schools Preparing Us for Prison?**

Schools and prisons are the two primary institutions that connect with the lives of individuals'. School is the place where one receives an education not only in academia but also about the norms of society, such as following authority. Prison is the institution where one goes to be "punished" for disobeying authority and society's laws. In the state of California, there are thirty-three prisons compared to nine University of California campuses. Students of color coming from low-income communities can see the division between them and their peers. Some students are guided into the college route, while others are pushed into the incarceration system. This stems from a child's experience in primary school dealing with "good" and "bad" behavior. We believe that the school-to-prison pipeline starts with having students excessively disciplined in ways like mandatory detention or expulsion from school. Then it develops into having correctional officers on school campuses which can lead students into juvenile detention facilities. The purpose of this research is to answer "How do our schools unconsciously guide our students into prisons and not into college?". We examined who the majority of students fall victim to the school-to-prison pipeline with twelve Ted Talk videos. This method was chosen in order to understand the reasons why and how students and their communities are affected by incarceration.

Cullen, Abigail

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Abigail Cullen

Abstract Name: **Conservation Agriculture: What do farmers think?**

Surface waters in The Red Cedar Watershed contain a high concentration of nutrients that are introduced via agricultural runoff, resulting in eutrophication.The introduction of conservation in land management practices of operations across The Red Cedar Watershed provides a promising solution to the complex issue ofeutrophication. These practices include no-till/reduced-till, cover crops, rotational grazing, grassed waterways, and nutrient management plans. In this study, the factors that influence producers to adopt conservation in their operation wereexplored, along with what factors act as barriers to the adoption of conservation.Semi-structured interviews with producers were conducted along with open-ended survey questions, to determine what factorsarethe primary influencewhen implementing land management practices.A thematic analysis was applied to each interview and survey response,andcodes were formulated based on previous research, anticipated responses, and actual responses.It wasdetermined return on investment (ROI)wasone of the most important factors for producers to implement conservation practices,as ROI is increased with no-till.Otherreoccurring influences included soil health, resilience, general conservation, engagement, and financial incentives. In addition, multipleproducers began no-till to initially save time, but after seeing the benefits, they continued the practice for reasons previously mentioned.The strongest barrier in place is the uncertainty that comes with changein land management, which requires a significant amount of engagement to overcome.Therefore, increased funding to organizations that engage with producersandinvestments in assistance to producers who are in the process of adopting conservation isnecessary.

Cullinane, Julia (Jules)

Institution: *MA - Westfield State University*

Discipline: **Other**

Author/Contributors:
Julia (Jules) Cullinane

Abstract Name: **Special collaborative artistic project - NCUR Murals project**

My art journey began with cartoons. I spent hours as a kid replicating my favorite characters from the screen onto whatever I had near me. I loved escaping into the world of what I saw on TV, imagining myself there. Additionally, I have watched my dad go into surgery almost twice a year since I was born, my brother was diagnosed with Type One Diabetes and I developed a rare autoimmune condition. I saw my relationship with my health begin to impact how I create art. I started using materialthat was difficult or completely impossible to erase, teaching myself to be more comfortable with mistakes and marks that were not "intentional". My process changed from drawing what I see in front of me to drawing what I feel, mapping out my emotions on paper, and converting those feelings into artwork. I am interested in being part of a collaborative team that works on the theme of human health and well being. My health experiences have helped me to cultivate more efficient and effective team-skills. Being sick, I couldn't do everything on my own and that was a hard lesson to learn. I know how to take other people's suggestions and combine them to include my unique perspective while contributing to the process even if I am not in control. It is my belief that the only thing that separates artists from non-artists is the will to create. This passion has driven me for as long as I can remember. There is nothing more that I want to do than share what I make with the world and I'm excited by this opportunity to create a collabortive mural with unique and diverse artists.

Cunliffe-Owen, Hillary

Institution: *WI - University of Wisconsin-Parkside*

Discipline: **Physics/Astronomy**

Author/Contributors:
Hillary Cunliffe-Owen,
Jack Binder,
Adam Ghouse,
ChangBeom Eom,
Zhongrui Li

Abstract Name: **Principle, Design, and fabrication of a next-generation superconducting quantum interference device**

Superconducting quantum interference devices (SQUIDs) are incredibly sensitive electromagnetic sensors that can detect extremely weak magnetic fields, such as those generated by the human brain and heart. Magnetocardiography (MCG) and magnetoencephalography (MEG) are examples of imaging methods that utilize SQUIDs. Specifically, a MEG can detect different neural regions of interest (ROIs) when participants are presented with various stimuli. A SQUID is fabricated by placing a pair of Josephson junction devices together, where two superconductors are spaced by an extremely thin electrical insulator. Traditionally, low-temperature superconductors are used in current SQUID systems, requiring a complex and expensive liquid helium-based cooling system. In contrast, high-temperature superconductors such as YBCO use liquid nitrogen-based cooling systems, which are significantly less costly to build and operate. Our current research involves designing and fabricating a YBCO-based SQUID, which may give a better spatial resolution and a more cost-effective solution compared tothe existing SQUID systems. Here, we discuss the ability of the SQUID-powered MEG to successfully locate brain ROIs when participants are shown various objects and highlight the shared networks for object recognition of concrete and abstract figures. We also present our experimental measurements on the superconducting and insulating materials used in fabricating a next-generation SQUID.

Cunningham, Blair

Institution: *GA - Kennesaw State University*

Discipline: **Architectural Engineering/Construction Management**

Author/Contributors:
Blair Cunningham

Abstract Name: **Reforming Concrete: Mechanical Innovation in Sustainability**

Timber frame concrete formwork can generate as much as 40% of construction waste on a given project. This study proposes a method of concrete formwork construction that aims to improve the versatility and sustainability of concrete construction processes through the application of a novel concrete reinforcement system which reduces waste generated by current concrete formwork practices. By using fabric to build formwork and provide reinforcement the possibilities of design in concrete and cementitious materials are widened. 3D printed shear dowels are placed into the formwork to transfer tension loads out of the concrete and into the fabric. The dowel is designed to have a pressure fitted locking mechanism for easy installation. The dowels are pushed through the weave of the fabric and have four points of connection to prevent a concentration of force in any one point causing the dowel to fail. There were several design iterations to ensure the dowel was able to efficiently distribute the shear forces. These parts are meant to be manufactured through 3D printing further supporting the sustainability of this process by reducing material waste and energy input for manufacturing processes. It is also cost effective; the parts can be scaled easily, and materials can be changed based on strength needs and applications. Testing is primarily focused on Selective Laser Sintering (SLA) printed resin parts because this method produces isotropic products which eliminate concerns relative to loading balance for printing and installation orientation. The material chosen for this project is a high tensile strength resin with comparable elongation at failure to steel to avoid brittle failure. This product will be analyzed by stress simulation of the design using several material parameters and compressive load testing of beams constructed with this technique.

Cunningham, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Grace Cunningham,
Esam Alfalah,
Krysti Knoche Gupta

Abstract Name: **Student Organizations as a Means to Effectively Develop Safety Culture Within Undergraduate Chemistry**

Safety education for college-level chemistry labs can be adequate for minor incidents of broken glass and small spills, but the chemical industry and graduate programs are often under the scrutiny of environmental health and safety departments that have far more stringent requirements than an average undergraduate student will encounter. Students who graduate with a bachelor's in chemistry often find themselves with a job where chemical hygiene is practiced at a level they aren't used to. Considering the professional and personal implications that poor adherence to chemical safety can have, more could be done at the undergraduate level to develop the skills and mindset associated with chemical safety. The Chemistry Student Safety Team (CSST) is a student-led, mindset-focused organization working to foster a safety culture at UWEC. The CSST is mentored by UWEC faculty and the UMN-Twin Cities Joint Safety Team (JST). The CSST uses safety demonstrations, awareness campaigns, PPE sales, and safety themed merchandise to promote safety culture. To track attitudes in the UWEC department of chemistry, the CSST uses an annual safety survey along with a system to report near miss incidents anonymously. Student safety organizations at an undergraduate level are an innovative way to promote safety-culture through peer education. With faculty support, student-led safety organizations such as the CSST can be an integral part of disseminating safety information to other students within undergraduate chemistry programs. Involving students in education and safety initiatives at an undergraduate level can lead to more effective researchers, more productive employees, lower organizational costs, and a more safe and equitable learning environment.

Curling, Megan

Institution: *NC - Elon University*

Discipline: Public Health

Author/Contributors:
Megan Curling

Abstract Name: **The struggle for restoration: how Thai villagers organize in response to environmental degradation**

This is a qualitative research study based on personal in-depth interviews (with IRB approval) of 30 residents of villages in Northern Thailand who are forced to cope with the toxic effects of contaminated groundwater from an abandoned gold mining operation. For the last 15 years, the village of Na Nong Bong and five others in the Wang Sa Phung district have been struggling to recover from the environmental impacts of a gold mining operation in their area. These communities, located in the Loei province, were excited for the opportunity to host Tungkum Limited before noise and dust pollution began, infiltrating dozens of local streams. This research project seeks to discover, through the respondents' storytelling, how they have sought, despite moments of brutality and oppression, to win government help to improve their public health and how they have altered their community strategies in seeking restoration projects. Additionally, the study relies on theories of resilience to analyze how these community members have moved toward healing after trauma. Respondents, recruited mainly through convenience sampling, represent a wide variety of ages and positions in the community. The researcher has identified themes and categories through two rounds of qualitative coding. Initial findings suggest that villagers have shifted their tactics over time and that newer generations of residents – including students who have experience with political protests in college – are inheriting roles in leading efforts to gain attention and resolutions. The author spent three weeks among the villagers during summer 2022 to conduct this research. The results of this project will provide insight into how a history of organizing in Thailand has contributed to this situation, how community organizers interact with long term restoration projects, and how communities move towards healing after traumatic experiences.

Curran-Moore, Sophia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: English/Linguistics

Author/Contributors:
Sophia Curran-Moore

Abstract Name: **Stigma of Giving Criticism in Peer Response**

Peer response, or peer review, is a common method instructors use in classroom settings with the aim of improving students' writing. Peer response consists of students reading each other's work and making suggestions for their peers' improvement. A faculty member in the English department and an undergraduate student researcher used IRB-approved ethnographic methods to study peer response. The researchers observed peer response in the university classroom environment and interviewed students and instructors about their experiences with peer response. In this presentation, the undergraduate researcher shares a paradox she noticed that was frequently communicated to her by the approximately 20 fellow undergraduates she interviewed. The paradox is that students often expect to receive comments regarding how to improve their own papers, even as they are hesitant to give such comments to their peers.The presenter argues that peer response lacks critical feedback due to the students' fear of judgement, despite most students wanting to receive critical feedback. Students shared that they don't want to be perceived as "mean" for telling other students how to improve their papers, and students don't want to hurt their peers' feelings. However, students want to receive comments that find faults in their own paper in order to improve. Students also find that they get a better grade on their paper when their peer reviewer gives them more suggestions for improvement. The presentation will include specific examples from field notes of classroom observations and excerpts of interview transcripts to demonstrate this paradox. The presentation will close with possible changes to the peer response method to reduce this paradox, such as building relationships between students and implementing face-to-face discussions.

Curtis, Haley

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Thomas Lubberstedt,
Siddique I. Aboobucker,
Sarah Pfeffer,
Haley Curtis

Abstract Name: **Arabidopsis thaliana as a Model Organism to Study Spontaneous Haploid Genome Doubling in Maize**

With the growing world population, accelerating maize breeding is essential forincreasing the earth's food, feed, and fiber supply. In maize breeding, inbred parents are needed to create hybrids, which are preferred for their vigor. Doubled haploid (DH) technology is utilized to develop homozygous inbred plants faster than traditional breeding methods. Traditionally, maize needs six to eight generations to obtain inbred parents. However, DH technology can reduce this time to as little as two generations. There are two steps involved in DH technology: a haploid induction step followed by a genome doubling step. The haploid induction step uses an inducer genotype to pollinate a donor plant. This results in haploid plants with a single copy of the chromosome. Then,the genome doubling step is used to overcome sterility in the haploid plants. Current methods for the genome doubling step are undesirable because the procedure is labor-intensive and involves toxic chemicals. Therefore, a possible solution to this problem is spontaneous haploid genome doubling (SHGD). Genotypes discovered with SHGD are haploid fertile. The goal is to discover genes involved in SHGD, as these genes are currently unknown.Arabidopsis thalianais a model organism with a shorter life cycle than maize. This research project willutilize anArabidopsis thalianascreening pipeline to identify potential candidate genes involved in maize SHGD. This presentationwill outline the various steps used to identify candidate genes, as well as the process of analyzing their involvement in haploid fertility. Ultimately, the promising candidate genes identified inArabidopsis thalianawill be eligible to repeat the pipeline to replicate results. If the results are confirmed, the candidate genes will be studied in maize.

Curtis, Kaylie

Institution: ***CAN - Vancouver Island University***

Discipline: Public Health

Author/Contributors:
Sarah Sheppard *Kaylie Curtis* *Marni Brown*
Lola Raymond-Bhatt

Abstract Name: Preparedness and Comfort Levels in Providing Sexual Health Education on Vancouver Island

Sex trafficking and sexualized violence are increasing in communities across British Columbia (BC). Sexual health education has been recognized as a powerful tool to prevent children and youth from experiencing these devastating forms of abuse. The question then becomes: who is providing this sexual health education to British Columbian youth, and how well is it being provided? While parents and private consultants often play a role in teaching children the basic concepts involved in sexual health education, the quality and scope of their explanations can vary widely. As such, a key source of sexual health education is teachers in primary and secondary schools. Typically, sexual health education in BC begins in kindergarten and spans through grade ten. While the topic's content is regulated through the provincial curriculum, previous research has shown that teachers are not providing consistent and thorough education. The disconnect between the curriculum and educators appears to be hinged upon two concepts: first, educators themselves do not have enough knowledge on the topics to teach them effectively, and second, educators may not feel comfortable with certain sensitive topics within the curriculum. This project sought to investigate how prepared Vancouver Island teachers-in-training are to teach sexual health education based on their knowledge and comfort levels regarding the curriculum topics. A survey was created with three sections: individual demographics, a curriculum-based knowledge test, and a subjective section focusing on comfort levels regarding various sexual health topics. The survey was open to university students enrolled in the Bachelor and Master of Education programs at Vancouver Island University and the University of Victoria. By examining these future teachers, this project aimed to illuminate how prepared the next generation of teachers are and provide insight into the future of sexual health education.

Czaplewski, Genevieve

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Political Science

Author/Contributors:
Genevieve Czaplewski

Abstract Name: Voter Attitudes in Relation to Rural Swing State Residency

United States voter turnout related to other democratic countries is very low. Internally, the United States has several swing states that tend to swing from one party to the other during federal elections. Furthermore, Americans tend to have very strong feelings about voting, which may impact whether or not they vote at all. Voter attitudes and swing state residency have the potential for an interesting intersection of research. Understanding why people do or do not vote in swing states, especially rural areas of swing states like Dunn County, WI, can help increase voter turnout in future federal elections, thus leading to a more representative government.According to past research, during presidential elections, swing states are campaigned and paid attention to much more than other states. Additionally, research has shown that the sense of community that are commonly found in rural areas increase voter turnout. Combining these two ideas and researching how swing states are treated and ideas specific to rural areas impact voter attitudes. The goal forthis research is to see how attitudes towards voting compares when voting in a battleground state versus a non-battleground state. The present researchhopes to understand how battleground state residency can impact how individuals perceive the importance and necessity of voting. Early analysis points to factors such as feelings of closeness to one's communityand election competitiveness as being motivators to rural swing state voters.

D'Agostini, Adriana

Institution: ***MI - Hope College***

Discipline: Education

Author/Contributors:
Jessica Schamanek *Adriana D'Agostini*

Abstract Name: Investigating a Local Elementary School?s Implementation of the Next Generation Science Standards

Next Generation Science Standards (NGSS) are being implemented by K-12 schools throughout the United States. The Outdoor Discovery Center (ODC), a nonprofit education organization, partnered with a school in West Michigan to assist their K-5 teachers with implementation of NGSS throughout the 2021-2022 school year. The purpose of this research was to determine how effectively the elementary school teachers incorporated NGSS into their science lessons, how engaged students were during the lessons, and how comfortable the teachers were with the new standards. Researchers collected data using interviews, focus groups, and surveys from three sample groups: teachers (n=24), students (n=7), and ODC ambassadors (n=4). Qualitative data were analyzed with NVivo software using inductive methodology to determine major themes. Quantitative data were analyzed using a Wilcoxon Signed Rank Test in SPSS to determine if there were changes in teachers' attitudes over time. Qualitative results revealed that teachers often felt overwhelmed with integrating NGSS because of a lack of time, difficulties gathering appropriate learning resources, and a lack of content knowledge. However, teachers persevered and continued with implementation as they observed increased student engagement, gained experience with the new standards, and received support from the ODC. Survey data indicated most teachers felt more comfortable with this style of teaching by the end of the year, but they recognized there was room for improvement. Specifically, teachers wanted to develop more robust assessment tools, schedule more co-planning time with each other and the ODC ambassadors, and engage in more professional development to increase their content knowledge and gain experience with NGSS-based pedagogy. The research team also noted that more science and engineering practices could be incorporated into the elementary lessons. Nevertheless, the first year of implementation laid a foundation for the future of effective incorporation of NGSS in this elementary school.

Da Fonseca, Stephanie

Institution: ***NY - Siena College***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Stephanie Da Fonseca

Abstract Name: Finding an Identity as a First-Generation American

This article is an exploration of the struggle that first-generation Americans go through when finding their sense of identity. I analyze the issue through an autoethnography, reflecting on my own experience as a daughter of immigrant parents but born in the United States, as well as a literature review with past research on the topic. With two distinct cultures, first-generation Americans struggle to find who they are, due to living somewhat of a double life - parent's culture at home and American culture once you leave the front door. This conflict can be confusing in the development of their identity, the ability to feel accepted or fitting in completely to either culture feels quite impossible. According to my research, the ability to assimilate to American culture and feel accepted is often dependent on having "American values and traits" such as having white-passing physical features, being patriotic, and believing in democracy and freedom. But even having all these traits and beliefs, one's identity is still conflicted because their life is experienced through both cultural lenses, the fulfillment of one still leaves something to desire for the other. The journey of discovering one's identity is complex and varies depending on one's experience, it is inconsistent. The search of finding one's identity as a first-generation American cannot be encompassed and boiled down to one conclusion, and is a myriad of small details that create one's identity. The American melting pot cannot melt all things down, and this is what the beautiful experience of living two cultures is, being different. Future research or application of this research should explore more in depth the difference in western and eastern first-generation Americans.

Dacayan, Tristram

Institution: *NJ - Kean University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Tristram Dacayan,
Daniel Ojeda,
Daehan Kwak

Abstract Name: **A Natural Language Processing Pipeline for Summarizing Behavioral Health Electronic Health Records**

Doctors and nurses have limited time between patients to analyze and review a patient's documents to provide a quality assessment. This problem is supplemented by the existence of Electronic Health Records (EHR), which are essentially digital files regarding the patient. However, the length and content of each document vary greatly, reducing the system's effectiveness. Therefore, this research aims to reduce the need for medical professionals to manually search for crucial information about the patient's health history. We intend to accomplish our objective by breaking down large digital documents into small subtasks and using various natural language processing (NLP) techniques to provide a concise summary. Thus we propose a three-block pipeline to accomplish this task. The first block extracts textual information from non-textual digital documents and transfers all the content into modifiable text files. The second block is split into two parts that simultaneously extract target information regarding the patient's mental and medical history using event extraction and named entity recognition (NER). The final block uses a popular abstractive summarization model, BART, to generate summaries based on the events discovered in the previous block. To optimize the output of our pipeline, we compared the summarization and sentence transformer encoder models with other popular models in the same field to ensure optimal results. Using the ROUGE, rand index, and completeness metrics, our model can effectively extract critical patient information from long-form EHRs and generate accurate and meaningful summaries highlighting popular and recurring events from a patient's life. In future work, we intend to migrate to a closed-domain event extraction model and implement a time for easier visualization.

Dachel, Karissa

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Olivia Felix,
Carrie Andersen,
Mitch Comerford,
Karissa Dachel,
Adam LeCleir,
Madison Schultz

Abstract Name: **Political Divide**

The current political climate in teh US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Daggs, Jeryn

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Biology

Author/Contributors:
Jeryn Daggs *Megan Seefeldt* *Tabitha Sikora*
Davis Lesperance *Douglas Brusich* *Jeryn Daggs*

Abstract Name: **Determination of the role of nucleoskeletal factors on mortality and seizures following traumatic brain injury (TBI)**

Traumatic brain injury (TBI) is a global public health issue affecting millions of individuals each year. One complication stemming from TBI is the occurrence of post-traumatic seizures (PTS), which affect up to 50% of individuals. Severe TBI, advanced age, and genetics are all associated with increased rates of PTS. However, these factors are poorly understood and the cellular and molecular mechanisms which initiate, drive, and maintain a PTS disease state are not known. These gaps in understanding hinder our ability to treat those suffering from PTS and prevent its development. Recurrent or lifelong PTS is associated with sustained changes in nervous system activity. Gene expression and nervous system activity are highly regulated processes. Central to gene expression are nuclear lamin proteins and associated binding partners. Interaction partners include the Linker of Nucleoskeleton and Cytoskeleton (LINC) complex which serves as a mechanical stress apparatus bridging cytoplasmic and nuclear functions. Lamins and the LINC complex are excellent candidates for factors which span contributions to aging, TBI outcomes, and PTS. We utilized the GAL4/UAS system in Drosophila melanogaster to drive RNAi-mediated knockdown of candidate genes. We specifically targeted the LINC complex factors consisting of fly Msp300, klarischt, klaroid, as well as the two fly lamins. Young flies were administered TBI via either a single, severe injury paradigm or a repetitive, moderate injury paradigm. Animals were then assessed for overall mortality, and also PTS via a simple behavioral assay. We found little evidence that genetic knockdown of candidate factors affected outcomes. Future directions include assessment of aged flies to understand if these factors are similarly negligible with advancing age.

Daigle, Aurora

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alyssa Harrington,
Lacee Allen,
Aurora Daigle,
Lauryn Deetz,
Abigail Lemos,
Brayden Wibel

Abstract Name: **Parental Involvement in Education B**

How relative is parental involvement in a child's education to the overall success of the child? Can parents be too involved in their child's education? In society today we are seeing an increased debate over the different types of parents and how good or bad they are to the overall growth and development of their children. Are helicopter parents harming their children's future? Are free range parents raising children with no rules or boundaries providing a need for society to deal with the evenual negative outcomes? The goal of this research is to study the different parental involvement levels in the education of their children and determine what positive and negative outcomes are present under each type of parental behavior. Some criteria that will be important in this study are the level of parental invovlement, to what age of the child does the involvement continue, academic performance and self-efficacy of the children. Other areas of interest in this study include whether gender and race/ethnicity are impacted differently under differing parenting styles. Correlational analysis will be completed through data collection in the spring semester of 2023.

Dailey, Daniel

Institution: *KY - University of Kentucky*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Steven "SJ" Lycans *Daniel Dailey*

Abstract Name: **Enabling a clean-energy economy from U.S. rare earth resources: characterization of low-grade allanite-based ore from Halleck Creek, Wyoming**

Rare earth elements (REEs) have significant value to technologies critical for energy infrastructure and independence, decarbonization efforts, and defense applications. REE supply is heavily constrained to deposits outside of the U.S., making economic and sustainable REE and other critical material recovery from low-grade source materialsparamount to U.S. national security.The goal of this research is tocollect, pulverize, and analytically characterize unutilized REE-containing allanite ores from primary deposits in Halleck Creek, Wyoming to define major mineralogical and elemental compositions.Halleck Creek core (130-kg) and surface (33-kg) samples were crushed to a top size of 4-mm through primary and secondary reduction processes. Mineralogical and total metal analyses were performed on screened size fractions and representative core and surface samples via X-ray diffraction spectroscopy (XRD), X-ray fluorescence spectroscopy (XRF), and inductively coupled plasma optical emission spectrometry (ICP-OES). A mineral liberation study was conducted via scanning electron microscopy with energy dispersive X-ray analysis (SEM-EDAX) to identify allanite and other REE-containing particles in the host rock. Grindability was investigated through standard rod mill laboratory tests to determine optimal conditions to generate 150- and 500-µm 80% passing size (P80) sample lots. The results of this research will identify what and where the value (i.e., REEs, critical materials) is in this uncharacterized allanite ore along with any intrinsic processing constraints.This comprehensive ore analysis will inform activities related to: REE beneficiation from the allanite-ore feedstock and outlining a REE biomining and purification workflow. Ultimately, this research will enable the development and demonstration of a modular, biobased REE biohydrometallurgy process through theDefense Advanced Research Projects Agency (DARPA) funded project titled Synthetic Biology for Biomining of Rare Earth Elements (SynBREE).

Dalton, Ashton

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: **Nursing/Health Science**

Author/Contributors:
Ashton Dalton,
Kevin Hoffseth

Abstract Name: **New Methods for Enhancing Detection of Microstructural Features in Cortical Bone**

Osteoporosis (“porous bone”) is a bone disease that negatively affects the structuralquality of bone tissue. Currently, it is not fully understood why some individuals develop osteoporosis and some do not, although it is known that sex, age, race, and body frame size play a role in osteoporosis development. One gap in understanding is due to an inability to properly track and analyze structurally relevant microstructural features in bone, primarily during mechanical testing of samples for basic research. There remains a need for improved study of cortical bone microstructure such as osteon alignment, positioning, and porosity. Alongside visible light microscopy, computed tomography (CT) and magnetic resonance imaging (MRI) are used currently to image bone microstructure, however, there is a constant compromise between image quality, resolution, and accuracy, along with an inability to use in-vitro with mechanical testing. By improving the ability to track the microstructure of cortical bone during mechanical testing, we may increase our understanding of how microstructure influences the likelihood of bone fracture. Thus, this project seeks to develop and apply optimized dye and stain methods to better detect microstructural features of cortical bone under visible and UV light.

D'Amore, Ryan

Institution: *NC - Western Carolina University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Ryan D'Amore,
Martin Tanaka

Abstract Name: **Investigation Into the Creation of a Biodegradable Croc**

The popular footwear known as Crocs produces significant waste each year because they are incapable of being recycled or easily destroyed. As a result, tons of waste build up annually across the globe polluting water and land. A potential solution is for Crocs to be created from a biodegradable material, able to break down naturally. In order to test this, we used a biodegradable material called YOGA Flex and 3D printers. The research began by acquiring an STL file from Thingiverse (www.thingiverse.com) for a croc meeting the desired traits. From this, many miniature crocs were printed for later material testing, along with one adult-sized for walking tests. Aside from the crocs, small tensile testing samples were designed and printed to acquire the mechanical properties of YOGA flex. This allows for the full-size pair of crocs to be printed as strongly as possible. The miniature crocs printed as desired, with the only visible issue being their stiffness, but as observed from the large model, this is likely due to the size. The large croc was evaluated via a brief walking test, however, it quickly sustained severe cracking damages on both the interior and exterior. From the tensile testing, it was observed that YOGA Flex with vertical layering had a yield stress of 0.962 (MPA) and anultimate stress of 6.253 (MPa), while the horizontal layering was only 3.316 (MPa). The data acquired from tensile testing clearly displays greater strength when vertical layering is used, therefore being a good option for the final print. ASTM degradation standards will be investigated to determine if microbial degradation testing could yield the desired results. In order to sustain a healthy world capable of housing our civilization, it is important for society to make the necessary changes to green materials.

Dandamudi, Rachana

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Krishnaveni Parvataneni *Amanda Pansoy* *Rachana Dandamudi*
Sohail Zaidi

Abstract Name: **Effect of Nitrogen Addition in Argon DBD Plasma on Rotational and Vibrational Temperatures**

Dielectric Barrier Discharge (DBD) plasma is a non-thermal, non-equilibrium plasma that is used in the medical field for wound healing and sterilization. Reactive Oxygen/Nitrogen Species (RONS) in plasma interact with water in the blood to produce hydrogen peroxide, and thus, accelerate the wound healing and sterilization process through the production of growth factors. To optimize the concentration of RONS, this study uses small percentages of Nitrogen (up to 5%) in Argon plasma, to see the impact on radical concentrations. The Argon Plasma was generated in a multi-electrode plasma torch, with Argon flow up to 15 slpm, and an AC voltage between 5 and 10 kV (20-40 kHz). The concept of the multi-electrode plasma torch was designed at San Jose State University. This design provides us control over plasma characteristics (i.e., gas, rotational, vibrational, and excitational temperatures, and radical concentrations) without changing the operating conditions. In the current work, the impact of Nitrogen addition was investigated by conducting emission spectroscopy on the plasma. An OceanOptics UV-IR Spectrometer was used to capture the emission spectrum, and SpecAir was used to extract information on the rotational/vibrational/excitational temperatures. Experiments show that the rotational and vibrational temperatures, along with intensity the emission lines present, are impacted by Nitrogen addition. Up to 30% variation in the vibrational and rotational temperatures was observed as the Nitrogen was added into the plasma. Excitational temperatures faced minimal change, as Nitrogen was added. Addition of Nitrogen changed the relative intensities of emission lines, particularly in the NO Band (225-275 nm), Nitrogen Second Positive System (N2 SPS) (330-380 nm), and the N2 II Molecular Line (391.05 and 427.38 nm). This presentation will quantify these relative changes to plasma temperatures as a function of added Nitrogen.

Daniel, Sherry

Institution: ***TX - The University of Texas at San Antonio***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sherry Daniel *Gabriel Garibaldi* *David Cifuentes*
Christopher Rathbone

Abstract Name: The effect of ethanol and adipogenic differentiation on myogenesis & insulin sensitivity in C2C12 Cells

In Type 2 diabetes skeletal muscle has a reduced sensitivity to insulin. Another characteristic of diabetic skeletal muscle is the presence of adipocytes within and between muscle fibers, which is implicated in altered insulin sensitivity. The effects of ethanol on the content of adipocytes within skeletal muscle and insulin sensitivity are not fully understood. In this study, we will investigate the effects of ethanol on adipocyte differentiation and insulin sensitivity using C2C12 cells.
C2C12 cells (20,0000 cells/mL) were cultured in tissue-cultured 24-well plates with growth media (GM) composed of DMEM, 10% fetal bovine serum, 1% Pen-Strep (P/S), and 0.2% Mycozap (M/Z) for 3 days. Upon 70% confluency, samples were then separated into different treatment groups: (1) Differentiation Media (DM) +/- Ethanol (EtOH), (2) Adipogenic Induction (AI) and Maintenance Media (AM) +/- EtOH. Samples in the DM+EtOH Group were cultured in DM (DMEM, 2% Horse serum, 1% P/S, 0.2% M/Z) along with 0%, 0.5%, 0.75%, 1%, 1.5% concentrations of 200% proof EtOH. Samples in the AI/AM+EtOH Group were cultured in AI media for 3 days (DMEM/F12, FBS, 1% P/S, 0.2% M/Z, Insulin, Forskolin, and Dexamethasone) along with the aforementioned concentrations of 200% proof EtOH prior to switching to maintenance media for the addition of adipogenic factors. Samples in the AM+EtOH Group were exposed to the established concentrations of 200% proof EtOH at the point of Induction Media and Maintenance Media (DMEM/F12, FBS, 1% P/S, 0.2% M/Z + Insulin). After performing immunofluorescence staining with myosin heavy chain (MyHC) and DAPI, confocal microscopy will be used to quantify the number of C2C12 myotubes, as well as fusion index (nuclei per myotube), average myotube length, and average myotube diameter. It is expected the Ethanol will significantly decrease fusion index, myotubes per field and total nuclei

Daniels, Brynn

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Josh Zupanc,
Pablo Garcia,
Jenna Roth,
Brynn Daniels,
Nick McFadden,
Cameron Stensen

Abstract Name: Smartphone Use and Well-being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.

Dao, Jessica

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Abbigail Pepka *Dylan Adams* *Jessica Dao*
Carly Gifferson *Alicia Olsen* *Jennifer Schwart*
Carly Swenson *Ava Quick* *Nicholas Beltz*
Saori Braun

Abstract Name: Impact of Caffeine Combined with Resistance Training on Post-Exercise Arterial Stiffness in Habitual Caffeine Consumers

Background/Purpose: Increased arterial stiffness has been shown as a marker of cardiovascular-related events. Previous research has revealed resistance training and caffeine consumption leads to increases in arterial stiffness independently. Therefore, the purpose of this study was to determine the residual effect of combining resistance training and caffeine on arterial stiffness in resistance trained females. Methods: This experimental study was conducted on 18participants between the age of 18and 23yrs who were resistance trained in accordance to ACSM resistance training guidelines. All participants were habitual caffeine drinkers as defined by consumption of at least 200 mg/day, 5 days/wk. Pre-trial evaluation of 10-rep max was performed to determine individual training load for each exercise session. Subjects completed both caffeine and placebo conditions in a counterbalance fashion to avoid an order effect. Caffeine was administered during each trial a dose equal to 3 mg/kg body weight. Each condition was followed by an exercise intervention consisting of a full-body superset resistance training protocol. Measurements of arterial stiffness (pulse wave velocity, pulse wave analysis, and pulse pressure) were obtained using the SphygmoCor® system at 4 different time points (baseline, post-exercis, 10min post-, 20min post-, and 40min post-exercise). Results: A two-way repeated measure analysis of variance (within-subjects) did not indicate a significant difference in measurements of arterial stiffness between placebo and caffeine trials, but a time effect was revealed to be significant within both trials ($p = 0.008$). Conclusion: The results did not indicate a summative increase in measurements of arterial stiffness due to the combination of resistance training and caffeine consumption.

Dardenne-Ankringa, Emma

Institution: ***MT - Montana State University - Bozeman***

Discipline: Biology

Author/Contributors:
Emma Dardenne-Ankringa

Abstract Name: Innate Immune Gene Expression in Bats Given Varied Diets During Influenza A Infection

Wild bats are hosts for emerging viruses that can be transmitted to humans in zoonotic spillover events when viral shedding occurs. Wild bats typically possess a high tolerance for viral infection and can suppress viral replication and shedding, but their viral suppression can be compromised when they experience stress or episodes of poor nutrition. This increases the likelihood of shedding and therefore spillover to humans. We hypothesized that inadequate nutrition alters the metabolic pathways of bats, and that these alterations fail to support the innate immune response of the bats in suppressing viral replication and shedding. To investigate the effects of diet on bat innate immune response, Jamaican fruit bats (Artibeus jamaicensis) were fed a base fruit diet or a diet consisting of fruit supplemented with either protein or fat. The bats were then infected with influenza A virus or a saline control. During infection, rectal swabs and blood samples were collected from the bats. qRT-PCR was used to examine gene expression in the immune systems of the bats. Preliminary analysis shows differences in gene expression in the innate immune systems of the bats between the different diet groups. Understanding the role bat metabolism plays in the suppression of viral shedding by the immune system could allow spillover events to be predicted by the detection of nutritional deficits in wild bat populations.

Dargan, Christopher

Institution: ***GA - Kennesaw State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Christopher Dargan,
Abm. Adnan Azmee,
Md Abdullah Al Hafiz Khan

Abstract Name: Automated thought-to-text conversion through automated brainwave signal annotation

Brain-Computer Interfaces (BCIs) are a technology that directly translates the brain's electrical activity to external devices. With the advancement of BCI technology in recent decades, many developments have been made, especially in helping people who have amputated limbs, epilepsy, or are paralyzed. This research will focus on assisting paralyzed people with limited ability to communicate. This will be done through an external BCI that translates thought into text. A closely related Brain-Computer Interface is a cursor control BCI. This type of BCI has many uses, one of which is the ability to select text similar to texting on a mobile device. However, a downside to this approach is the limited rate of communication. This research will record electroencephalogram (EEG) data or brainwave signals from a subject's brain and annotate automatically using our developed annotation User Interface (AUI) while they think of writing a letter through an external headset. Finally, we envision applying a machine learning algorithm to decode human thoughts (brainwaves) to text. The algorithm will predict and output the letter the subject was thinking of and display it as text in our AUI.

Darling, Amanda

Institution: ***TX - Tarrant County College***

Discipline: Chemistry/Materials Science

Author/Contributors:
Amanda Darling

Abstract Name: CBD Quantification Using 43 MHz 1H-NMR

Recently a wide variety of cannabinoid products have flooded the consumer market. The 6-billion-dollar cannabidiol (CBD) industry has been able to expand without much restraint for years due to dubious regulation and existing in a legal grey area throughout most of the United States. Claims that cannabis is a safe and effective treatment for various conditions have been made, but while manufacturers are quick to capitalize on the trend, cannabis's status as a schedule one drug has created barriers for independent research, academic studies, and clinical applications. With such dysregulation the labeling of consumables isn't held to the same accuracy as the FDA requires of traditional food and drugs. Barriers to consistent testing of these products include the cost of equipment and development of methods. This work sought to develop a procedure to measure content and concentration using benchtop NMR. Isolated cannabidiol was analyzed and used to create a calibration curve by which locally sold CBD tinctures could be tested. The method has been used successfully, producing results that agreed with the declared values on various CBD oils and it has reliably reproduced consistent results in triplicate. Rapid quantitative testing using a 43MHzbenchtop NMR could be a reasonable, affordable option for both a manufacturer's in-house product testing and for outside independent review.

Dart, Peter

Institution: *KS - University of Kansas*

Discipline: **International Studies**

Author/Contributors:
Peter Dart

Abstract Name: **GOING FOR GOLD: THE IMPACT OF SPECIAL OLYMPICS RWANDA ON SOCIAL INCLUSION FOR PERSONS WITH DISABILITIES**

This research project will examine the impact of Special Olympics (SO) participation on the social inclusion of Persons With Disabilities (PWDs) in Rwanda. Special Olympics Rwanda (SOR) strives to create an inclusive environment, encouraging the social inclusion of PWDs in Rwanda through competition and team-building activities.This research connects to previous studies by identifying effective SO organizational structures and contributions of SO participation to the social inclusion of PWDs, observable through government reports and interview data, with a narrow focus on Rwanda.The purpose of this research is to use the social model of disability to examine the social inclusion of PWDs in Rwandan community, educational, health, and employment services to identify systemic barriers inhibiting the full inclusion of PWDs in Rwandan social services. The data I will use to examine SO programs in Rwanda will be collected from interviews with Special Olympics International (SOI) and SOR personnel. Additionally, I will collect data from relevant Rwandan government reports and documents to identify possible trends towards full inclusion of PWDs in Rwandan educational and health structures. I will analyze the content using thematic coding of textual data to identify common themes in the development and evaluation of SO programs dedicated to the social inclusion of PWDs in Rwanda. The data may reveal the role of SOR in the development of inclusive spaces for PWDs in Rwanda by highlighting the organizational strategies, observable outcomes from SO participation, and positive trends in access to education and employment for PWDs. The role of SOR in developing inclusive spaces for PWDs will serve as a framework for replication in other developing nations with emerging SO programs.

Dattilio, Isabella

Institution: *GA - Georgia College and State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Isabella Dattilio,
Logan Hall,
Haidee Martinez Perez,
Peter Rosado Flores

Abstract Name: **Synthesis of mesalamine and curcumin capped silver nanoparticles for the treatment of Irritable Bowel Disease (IBD)**

Silver nanoparticles are innovative materials which have found uses in the field of antiseptics and drug delivery systems as of late. The term IBD (Inflammatory Bowel Disease) is used to describe the series of chronic illnesses that are characterized by inflammation of the intestinal track lining. The two main diseases are Ulcerative Colitis (UC) and Crohns' disease (CD). One (UC) affects mainly the entirety of the colon while the other (CD) affects the entirety of the digestive system (from mouth to anus). To aid in the remission of an inflamed bowel, 5-ASAs (Mesalamine, balzalaside etc.) and curcumin are beneficial, alongside corticosteroids (prednisone) and biologics (Adalimumab and Infliximab). 5-ASAs (Mesalamine) are used to halt and avert flare-ups within the digestive tract while steroids and natural supplements such as curcumin, assist in the management of inflammatory and oxidative conditions. An effective synthesis of silver nanoparticles involves the use of silver nitrate, a capping agent (such as mercaptosuccinic acid) and a strong reducer (such as sodium borohydride). The two experiments were conducted while studying pH changes at each step. Then, UV-Vis was applied to verify the appearance of the nanoparticles. Signals around the 350-400 nm area confirmed the presence of silver nanoparticles in the two experiments. This work explores conditions that are used to synthesize these nanoparticles, that could be beneficial someday, in the delivery of therapeutic agents straight to intestinal lesions in the colon or digestive track.

Dausch, Sage

Institution: *SD - Black Hills State University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Sage Dausch

Abstract Name: Queer Fantasy in Printmaking

My purpose of my body of work is to create loving, comforting, and perhaps slightly risqué images of queer and trans characters. I created these artworks to exhibit and take up space in my community because they are often not visible or celebrated. My largest inspiration for this series was fantasy novels, movies, and video games. I wanted to combine queerness and these themes of fantasy because they're both aspects of who I am. I also mixed these themes because the queer and trans representation in many popular and classic fantasy genres is either absent or not very good representation. These characters in my prints are meant to represent various gender identities and sexualities; I really wanted people to feel seen through them. Queer and trans individuals deserve to have representation of themselves in ways that aren't focused on their suffering and pain. The printmaking methods I used for my finished projects are relief, woodcut, and screen-printing. Screen printing is a process where a design is applied onto a flat surface using ink, a squeegee, and a mesh screen to create the finished product. The relief print is created by carving a design into a printing block, and then pressing said block onto paper to transfer the image. The woodblock printing process is a form of relief printing, a process where a design is carved out into a piece of wood which is then pressed into paper to transfer the design. I used these various printmaking processes as a catalyst for my queer, trans, fantastical characters and imagery. I delved into the queer printmaking community and became inspired by people who were and are also creating important art that strives to make others uncomfortable in the way of learning and unlearning things about queerness, transness, and gender nonconformity in general.

Davenport, Angela

Institution: *TN - University of Memphis- Lambuth*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rachel N. Caulk *Angela Davenport* *Christina Byers*
Cheryl A. Bowers

Abstract Name: Self-Esteem in Relation to Online and Offline Communities

Peacock and Cowan (2019) found that having significant trusting relationships increases one's self-esteem. While these trusting relationships were once formed offline, they are now being developed online as well with the increase in reliance on technology. It follows that Best (2014) found some online communities may also increase one's self-esteem. This study compares the self-esteem of individuals who have a strong sense of community in an online group to those who have a strong sense of community in an offline group. We hypothesize that both groups will have similar patterns of self-esteem. We also hypothesize that those with strong connections to either community will demonstrate higher self-esteem than those with lower connections to a community. Participants were acquired through the Department of Psychology SONA system as well as recruitment in psychology courses. Participants completed the Brief Sense of Community Scale in reference to their online community and then completed it again for their offline community. Participants also completed the Rosenberg Self-Esteem Scale. Data collection is currently underway and will continue through the last week of November, with data currently obtained from 87 participants. The anticipated total number of participants is 120. Upon completion of data collection, Pearson correlations will explore a) the relationship between self-esteem and sense of community in an online group as well as b) self-esteem and sense of community in an offline group. In addition, an independent t-test will compare self-esteem between those who are most strongly connected to an online community and those most strongly connected to an offline community. With technological communication growing rapidly, our relationships with one another will change as well. With these changes, it is important to learn more about how they are affecting us and the way we relate to one another.

Davenport, Kimberly

Institution: ***IL - Loyola University of Chicago***

Discipline: Psychology/Neuroscience

Author/Contributors:
Kimberly Davenport,
Caroline Meis

Abstract Name: Paternal Family Versus Maternal Family Involvement for Children in the Foster Care System of Chicago

Prior work on the impact of parenting on children's emotional and behavioral outcomes focused on maternal parenting and continued this path when exploring extended family involvement. When research began demonstrating the critical role fathers can play in children's mental health outcomes (Amato; Gilbreth, 1999), this work lacked the involvement of paternal extended family. Given that most children in foster care come from non-resident father homes, research regarding paternal involvement has fallen behind. Nonetheless, recent research has found that fathers of children in foster care can play an important role in supporting their children's mental health outcomes (Leon et al., 2016). Little to no research has explored paternal relatives' support of children in foster care. It seems feasible that if maternal relatives play an important role in supporting children in foster care, then paternal relatives might as well. For this study, 204 children (six to 13 years) from Chicago's foster care system were sampled and received family-finding intervention. Family finders reported on all available relatives of kin, fictive kin, and their involvement with the child. This research aimed to expand upon the Leon et al. (2016) study to compare the frequency of maternal versus paternal kinship systems involved in raising children in foster care. Through file reviews from trained family finders, it was found that maternal kin had greater involvement in childrearing; one in two reporting positive attachment figures from the maternal family. However, a significant minority of children (1 in 4) received support via a positive attachment figure from paternal kin. Though fathers and paternal family members have historically been overlooked, the current study underlines the importance of examining social support from paternal kin. Thus, the importance of the father's family in child welfare case planning should not be overlooked, and further research should be done on the subject.

Daves, Hailey

Institution: ***FL - The University of Tampa***

Discipline: Public Health

Author/Contributors:
Hailey Daves *Victoria Meguro* *Emma Kotelnicki*
Olivia Osseiran *Mary Hart* *Claudia Aguado Loi*
Melissa Williams

Abstract Name: Beyond Translation: A Qualitative Inquiry Study for Refining a Culturally and Linguistically Adapted Health Coach Intervention for Latina Breast Cancer Survivors

Background: Latina breast cancer survivors historically lack linguistic and culturally tailored coping and management interventions. Traditional adaptation of English education materials for a Latina audience often address surface cultural features such as language, but lack nuances garnered through formative research with the target audience. This study implemented a collaborative community-academic partnership to develop a multi-module health coach intervention and coinciding workbook tailored to the needs of Latina breast cancer survivors (LBCS). All materials used in development were adapted from nationally recognized guidelines for cancer survivors. Thus, this study aimed to gather qualitative data assessing cultural relevance of the transcreated (translated + culturally adapted) health coaching intervention for LBCS. Methods: Following best practice for cultural adaptations, English materials were reviewed by cancer survivorship experts and transcreated into Spanish. Two focus groups (6-8 participants each) were held in Spanish to assess the cultural relevance of the transcreated materials to LBCS. Focus group guide questions were informed by two theories (Social Cognitive Theory, Help-Seeking Behavior Model), learner verification (a methodological approach for education message design). Guide also included questions on feasibility. Transcripts were translated into English and analyzed using thematic analysis. Community expert review confirmed findings.Results/Discussion: Emerging themes included content relevance, applicability, saliency of messages for comprehension, and areas for further refinement.Verification checks with our community partner confirmed content revision and solutions for incorporating participant feedback in future implementation. Data from focus groups allowed for further verification of acceptable content and method expansion prior to piloting with LBCS as a final refining step in the transcreation process. Conclusion: Reflection of cultural reality during program development is crucial for intervention adaptation in diverse populations while building social capital. Transcreation allowed for a collaborative process guided by the integration of cultural nuances, while participant first-hand experiences led modules toward cultural accuracy.

David, Anthony

Institution: *IA - Iowa State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Anthony David *Sam De Penning* *Todd A. Kingston*
Pranav Shrotriya

Abstract Name: **A platform for detecting biothreats by growing nanoporous alumina on indium tin oxide-coated glass.**

Nanoporous anodized aluminum oxide (NAAO) films are great candidates for biosensor platforms because the pore geometry can be controlled and specifically tuned to achieve pores with nanometer-sized radii and high aspect ratios. Electrochemical oxidation or anodization of aluminum in oxide-dissolving electrolytes leads to forming of an NAAO layer with nanometer-sized porous structures. Furthermore, a two-step anodization process under certain electrochemical constraints -- the type of acid, concentration, temperature, voltage, anodization time, and anodization area -- results in a self-ordered honeycomb-like arrangement of smooth-walled pores with desired diameters and interpore distances. After the first anodization, a thin NAAO layer with irregular pore walls is formed. This layer is then etched away, exposing the aluminum underneath with nanometer-sized dimples on its surface. Duringthe second anodization, the aluminum is completely converted to NAAO. To verify that the anodization process produces NAAO films with the targeted characteristics, scanning electron microscopy (SEM) is used to image the NAAO, and digital image analysis is utilized to measure the pore diameters and interpore distances. NAAO films are grown on indium tin oxide (ITO)-coated glass to be used in a biosensing platform to detect various biothreats. Since the pores are uniform and straight, the NAAO film has excellent ionic transport characteristics that can be modulated through changes in surface charge distribution. Interaction of biothreats with receptor species immobilized on the pore surface modifies the ionic transport and impedance of the NAAO layer. The electrical conductivity of the underlying ITO is needed to measure these impedance changes. Furthermore, with a high surface area-to-volume ratio in the NAAO, the biothreat/biomarker reaction signal will be amplified.

Davies, Meredith

Institution: *PA - Drexel University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Meredith Davies

Abstract Name: **Microencapsulation of Rose Bengal for use with Sonodynamic Therapy**

Rose Bengal (RB) demonstrates toxicity to malignant cells and may induce an immune response. The purpose of this study is to attach RB to a microbubble (MB) to facilitate delivery through sonodynamic therapy (SDT) using MBs and low intensity ultrasound to release drug at a target site. A MB shell is made up of surfactants each with a hydrophilic head and hydrophobic tail. Typically, a hydrophobic drug is incorporated into the bubble shell. Since RB is water soluble, when typical encapsulation was attempted, a series of wash steps resulted in no drug loading. The later attempt focused on RBs negative charge. By adding the surfactant cetyltrimethyl ammonium bromide (CTAB) the MB becomes positively charged, and a RB wash allows the RB to be attached. Drug loading was compared between one batch loaded with CTAB and one without, the same wash steps were followed for each batch. In the CTAB batch, 2.1 mg/mL of RB were loaded compared to no evidence of loading on the batch without CTAB. These results were confirmed using both a plate reader and a fluorescent microscope. Results gave a MB diameter of 2.1 µm at a concentration of 1.35×109 MB/mL. The results demonstrate excellent potential of this method to produce RB-MB for use in SDT.

Davis, Garrett

Institution: *NC - Fayetteville State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Antonio Ball *Garrett Davis* *Ryan De Jesus*
Taryn Rozier *Adriel Alvarez-Collazo* *Daniel Bigler*
Ashley Sutherland

Abstract Name: **Vision Guided Drone Flight**

Drones are increasingly being used for reconnaissance, tracking, and inspection of locations that are difficult to access. Our team's research is to create increased autonomy for drone flight in physically confined environments. Our team is currently using the Tello EDU drones which can be programmed using the Python programming language. It, allows us to utilize OpenCV in conjunction with the Tello drone's built-in camera. The OpenCV software library is an Open-Source Computer Vision software. Computer Vision (CV) is the area within Artificial Intelligence (AI) that builds algorithms for computing machines to be able to make autonomous decisions based on visual data. OpenCV has built-in functions for a wide range of visual intelligence tasks including object detection. We're making use of April Tags which allows us to visually tag locations in physical space. Current work is focused on developing software for the drone which will enable it to fly through a gate to enter a confined space without collisions. In our research so far we have found that using the AprilTags to identify the border of the gate opening is an effective approach for guiding the flight path of the drone so it can enter the gate collision free. We, have also found that it is possible to incorporate YOLO, which is a CV algorithm for object detection for being able to identify objects within the field of vision of the flying drone's camera. Potential future uses for vision guided drones is the ability to navigate through environments and around obstacles to find people or objects of interest. The Tello drone's ability to fly as a swarm allows it to communicate with other drones, run tasks in parallel, to speed up task completion. Future research efforts will be directed towards swarming and task parallelization.

Davis, Jesse

Institution: *TN - University of Memphis*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
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Frank Andrasik *Jeffrey Sable* *Helen Sable*

Abstract Name: **SUBDERMAL VERSUS EPIDURAL LONG-LATENCY AUDITORY EVOKED POTENTIALS IN RATS: A VALIDATION STUDY**

Event-related potentials (ERPs) are the summation of postsynaptic activity time locked to a stimulus which are recorded using electroencephalography (EEG). ERP's high temporal resolution reflects complex activation of neuronal networks in relation to particular events or cognitive processes. Notably, they also provide an analogous phenotypic measure between humans and animal models, and thus, are well suited for studying mental disorders and improving the validity of existing psychiatric animal models. Currently, except for auditory brainstem responses, ERP research in rodents has predominantly utilized relatively invasive EEG recording procedures like epidural electrodes. The purpose of this study is to validate the use of less invasive subdermal methods for ERP measurement. 20 adult, male Wistar rats will be implanted with subdermal needle electrodes while anesthetized with continuous isoflurane. Once fully awake, they will then be presented with a passive auditory paradigm consisting of a sequence of 5-tone trains with either 1- or 5- inter-train intervals (ITIs) presented at a frequency of either 8-kHz or 500-Hz. To assess temporal stability, subdermal needle recordings will be conducted twice for both frequencies separated by 2-3 months. Approximately 2-4 weeks following the second round of subdermal needle recordings, rats will undergo a craniotomy to implant skull screw electrodes for invasive recordings. We predict our findings will demonstrate the applicability of a semi-invasive method for recording ERPs in awake rats. Moreover, this work will allow for a better understanding of the comparability of findings between these epidural and subdermal approaches, which is vital to the replicability of findings within and across labs. Overall, this work has the potential to support the validity of an approach for measuring ERPs in awake rats that is less invasive and harmful than most conventional, invasive approaches.

Davis, Kirsten

Institution: *GA - Kennesaw State University*

Discipline: Nursing/Health Science

Author/Contributors:
Yulisa Flores *Kirsten Davis* *Doreen Wagner*
Sharon Pearcey

Abstract Name: **The Influence of Surgical Stress and Inflammatory Biomarkers on the Occurrence of Postoperative Delirium**

Research focusing on hypothermia has established a relationship between surgical stress and inflammatory biomarkers on delirium incidents in critically ill non-cardiac surgical patients. Unfortunately, postoperative deliriumis a common complication after surgery and results in acute brain failure. Though the cause of delirium is still relatively unknown, systemic inflammation with neurological involvement is one of the leading etiologic theories. Another common complication in surgical patients, is the occurrence of unplanned hypothermia during non-cardiac surgeries. For our study, we will be looking at two inflammatory biomarkers: C-reactive protein (CRP), and Interleukin 6 (IL-6). CRP is produced in the liver and is an index of overall inflammation in the body and is found elevated in postoperative delirium. IL-6, a pro-inflammatory cytokine, promotes a variety of cell functions that stimulate end enhance inflammation and is also known as a brain-active interleukin. IL-6 is a biomarker identified as a predictor of postoperative delirium when compared to those that do not experience postoperative delirium.Delirium assessments, surgical temperatures, and blood samples will be obtained from at least 100 non-cardiac surgical intensive care patients at a local hospital for the first three postoperative days.) Our role in the project is to separate the serum from the blood and perform enzyme-linked immunosorbent assays (ELISAs) for CRP and IL-6. We will be assaying the separated serum to identify the levels of the two previously established inflammatory biomarkers. Through the comparison of inflammatory biomarker levels and surgical temperatures in non-cardiac patients with and without postoperative delirium we hope to establish the influence of inflammatory stress and unplanned hypothermia on postoperative delirium. It is hoped that the findings from this study will further the understanding of how to assess, treat, and prevent postoperative delirium. Presently, this is a work in progress and our findings will be shared at the conference.

Davis, Mackenzie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Anna Fregien,
Mackenzie Davis

Abstract Name: **Effect of Climate Conditions on Leaf Traits in Sunflowers**

Plants are sensitive to their environment and are phenotypically plastic, meaning that individuals are able to adjust their morphology in response to external factors. Thus, patterns of plasticity in plants are great indicators as to how our climate is changing. We are determining the effects of climate conditions, such as precipitation and temperature, on specific leaf traits in 3 species of sunflowers. These effects can help us predict and understand how sunflowers grow and acclimate in response to these climate conditions and help us understand how other plants might also change.We conducted a common garden experiment using approximately 225 plants from three species of sunflowers, Helianthus maximiliani, H. grosseserratus, and H. giganteus, planted at a site in Eau Claire, Wisconsin. We harvested leaves of each plant in July to measure a suite of traits. We focused on specific leaf area, leaf water content, and leaf thickness because these traits are often correlated and all exhibit associations with the amount of precipitation and the temperature of the environment. We are examining how these traits were affected by varying temperature and precipitation rates over the past three years and will determine if variation in trait values may be driven by environmental differences across years. These results will tell us a great deal about how sunflowers and plants in general may respond to climate change.

Davis, McKinley

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Psychology/Neuroscience

Author/Contributors:
McKinley Davis *Dylan Jensen* *Emma Augustine*
Daniel Ehlinger

Abstract Name: Adolescent social isolation stress enhances nicotine conditioned place preference and disrupts stress coping behavior.

Adolescence is a sensitive period in brain development that is marked by increased susceptibility to the effects of chronic stress, which may enhance vulnerability to neuropsychiatric conditions such as depression and substance use disorders. In the present study, we used an animal model to examine the effect of adolescent social isolation stress on coping behavior and nicotine reward. During the adolescent period from postnatal day (P)35-P49, male and female C57BL/6J mice were exposed to either social isolation (SI) stress or standard rearing (SR) conditions, as well as nicotine exposure (0.35mg/kg) four times between P35-P49 during a nicotine conditioned place preference (CPP) procedure. On approximately P50, stress-coping behavior was examined following a 6-minute forced-swim test (FST). Our behavioral results show that both male and female SI mice more rapidly develop nicotine CPP compared to SR mice, that SI mice exhibit increased levels of immobility in the FST, and that prior nicotine exposure during social isolation decreases immobility in the FST. These results suggest that adolescent social isolation stress enhances the rewarding effects of nicotine and negatively impacts stress-coping behavior. To determine whether adolescence is a sensitive period for these effects, ongoing research efforts are aimed at comparing these results to adult social isolation and nicotine exposure. Furthermore, we are examining stress-induced functional (c-fos expression) differences in the brains of SI versus SR mice in response to the FST via immunohistochemistry of the dorsal raphe ascending serotonergic system. Collectively, these analyses will help determine neurological correlates of adolescent susceptibility to the negative effects of chronic social isolation stress and inform our understanding of adolescent brain development and vulnerability.

Davis, Tara

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Tara Davis *Max Boeck* *Ashley Fricks-Gleason*
Tessa Vallin

Abstract Name: Novel METH Neurotoxicity and Exercise Biomarker Discovery in Rat Striatum using RNA-Seq

Abstract: Methamphetamine (METH) is a dangerous and addictive stimulant drug that damages the central nervous system and is used by over 1.6 million people in the United States. Specifically, methamphetamine acts as an agonist to dopamine and glutamine receptors, which causes long term damage in the striatal region. Current treatments for METH neurotoxicity are ineffective and expensive, but investigation into more accessible and effective treatments is being done. Exercise has been shown to boost neuroplasticity of the brain, and also trigger the production of proteins that promote neural cell growth and survival. We previously conducted a study on a rodent model which showed that exercise after METH treatment can decrease neurotoxicity more rapidly than normal through examination of dopamine transporter protein expression. In order to further test the validity of exercise as a treatment for METH neurotoxicity, we took samples from the striatums of rodents and extracted the RNA to create cDNA libraries. These cDNA libraries were then sequenced and analyzed in order to identify biomarkers of differences between rodents treated with exercise after METH injections and those that were sedentary. The libraries were also analyzed for biomarkers of difference between rodents that were treated with METH compared to those that only received saline. A literary survey will be performed to identify the function of the genes associated with the identified biomarkers of differences between groups, with hopes of identifying novel pathways involved in recovery from neurotoxicity and addiction.

Davis, Valesia

Institution: *GA - Georgia Southern University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Valesia Davis,
Sevki Cesmeci

Abstract Name: **A Novel Magnetorheological Elastomer-Based Artificial Pancreas**

Automated Insulin Delivery (AID) systems are used to monitor and control blood glucose levels, which would otherwise have serious health problems for diabetic patients, including damage to the heart, kidneys, eyes, and nerves. Today there are 1.6 million Americans are living with Type 1 Diabetes (T1D), including about 200,000 youth (less than 20 years old) and 1.4 million adults (20 years old and older). Despite the demonstrated clinical benefits, T1D patients avoid taking advantage of such AP systems because of the physical and psychological burdens of wearing an on-body insulin pump. Thus, there is a pressing need for insulin delivery systems with reduced “form-factors” and other “user-centric” features to increase the greater adoption of such devices in the T1D community. To offer a potential solution, we propose a novel magnetorheological peristaltic micropump (MR-µPUMP) that has not been studied previously to offer an efficient, miniature (on the order of 1 mm), lightweight, portable, wirelessly controllable (with a fast response time of less than 100 ms), durable, low power micropump for insulin delivery. In this study, we carried out physics-based computer simulations in COMSOL Multiphysics software. The proposed micropump can transfer 1.9 µL of fluid in one pumping cycle, which is almost two times the other micropump models. Also, the proposed flap valve can reduce the backflow up to 10 times during the expansion phase in comparison with the no-valve model. The application of the proposed micropump is not limited to insulin delivery systems for T1D patients and can also potentially be used in a wide range of other applications such as artificial organs to transport blood, organ-on-chip applications, micro-cooling devices, and so on.

Davison, Connor

Institution: *IA - Iowa State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Connor Davison,
Abigail Krull,
Kierinn Mobley

Abstract Name: **Creation of Anxa2 Deletion Mutants in Zebrafish Using CRISPR/Cas9 Gene Editing**

Annexin A2 is a calcium-dependent phospholipid-binding protein that facilitates angiogenesis via endothelial barrier maintenance and sprout formation. However, the functions of Annexin A2 are not well established in endothelial cells in vivo. The Annexin A2 gene in humans corresponds to a duplicated locus in zebrafish, called anxa2a and anxa2b. We are using CRISPR-Cas9 to make mutations of the Annexin A2 homologs in zebrafish to take advantage of the optical clarity of the early embryo to follow endothelial morphogenesis. Due to the possible overlapping functions of these homologs, we designed gRNAs that, when complexed with Cas9, targeted the 5’ and 3’ UTRs of both anxa2a and anxa2b. This was done to induce whole gene deletions instead of creating loss-of-function mutants through indel formation. These whole gene deletions would allow us to avoid genetic compensation induced by mutant transcripts. We also designed a tag-RFP construct flanked by short homology arms for integration into the deleted locus to visually track anxa2a and anxa2b expression during development. Here, we describe a whole gene deletion of anxa2a (14,172 base pairs) via CRISPR-Cas9 injection in fli1-egfp embryos. We have recovered a stable germline deletion in anxa2a. Our next steps are to induce a whole gene deletion in anxa2b for further functional analysis and create mutants homozygous for both deletions. This will allow for loss-of-function analysis of the Annexin A2 duplicated locus in zebrafish for a more complete phenotypic analysis and characterization of the genetic requirements of anxa2a and b during endothelial morphogenesis.

Dawson, Grace

Institution: *WI - Marquette University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Grace Dawson

Abstract Name: **The Defictionalization of Pre-21st Century Pandemic Narratives in Social Media Responses to COVID-19**

Society is no stranger to pandemic narratives, which have found a renewed public interest throughout the COVID-19 pandemic. This surge in popularity has resulted in the use of these texts as medical and moral authority by people communicating about them online. In this paper, I analyze rhetoric in Twitter posts (“tweets”), independent website articles, and the limited scholarly research that has been published about COVID-19 in relation to three classic pandemic narratives (The Last Man, The Plague, Journal of the Plague Year). When looking at the language used in these modes of digital communication, I found a clear trend of defictionalization through both the medical and moral authority given to the texts, with posts in both categories making allusions to their supposed prophetic nature. This indicates a tendency to reduce the ability of the past to produce fictional work, emboldening greater leeway with narrative interpretations and the potential for equating them to reality.Subsequently,the observed rhetoric suggests that people are escaping perceived responsibility for the events of the pandemic by seeing the texts as both factual and prophetic. These findings provide context through which we gain a new understanding of the social construction of illness and the impact of how it positions these narratives as being capable of providing beneficial, actionable advice.Additionally, knowing the implications of our interpretations of literature and how it is applied to real-world events offers insight on the spread of misinformation. The ability—or inability—to differentiate between truth and fiction online isand will continue tobecrucial to the stability of our collective systems of knowledge, particularly when they concern matters of public health and safety.

Dawson, Maren

Institution: *UT - Weber State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Maren Dawson,
Timothy Herzog,
Matthew Nicholaou,
Ashley McCauley

Abstract Name: **Anti-Microbial Properties of Cobalt Complexes**

Disease can be transmitted in a variety of pathways, including bacteria. The study and eradication of disease is important to help increase the general health of the population. Cobalt is an element known to contain anti-microbial properties that inhibit the growth of bacteria. To test the inhibition of bacteria, tris ethylenediamine cobalt iodide was synthesized in two enantiotopic, Dextrorotary and Levorotary, forms. Three other cobalt complexes were also synthesized for use. The chemical formula for these complexes are [Co(NH3)4CO3]SO4, [Co(NH3)4CO3]NO3, and Co(NH3)5Cl3. The next step is examining the anti-microbial properties cobalt complexes contain by using a Minimum Inhibitory Concentration (MIC) plating technique. Four types of bacteria will be tested in combination with each cobalt complex, in triplicate, using a 96 well plate. The four types of bacteria being tested are E. Coli, Klebsiella Pneumoniae, MRSA, and Streptococcus A. The five different concentration levels that will be used are 0.1M, 0.01M, 0.001M, 0.0001M, and 0.00001M. Triplicate data for each compound at each concentration will be recorded for the results. The purpose of the project is to discover the most effective technique and determine which cobalt complex is the best inhibitor. Using that information, we could propose a drug treatment that can be used to prevent diseases and conditions caused by the bacteria. With future projects, we hope the medicinal applications and toxicity levels of the cobalt complexes from this research project are explored. This would help increase the chance of finding a cure for the diseases and conditions these bacteria cause.

Day, Rebecca

Institution: ***CA - Chapman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Pamela Coelho *Rebecca Day* *Claire Annino*
Daniella Benabou *Marissa Thompson*

Abstract Name: The Dream Machine as Confluence: Hallucination, Neuro-Diversity, and the Creative Industries.

Our research project focusses on how a social media campaign was designed and implemented to explore how people engaged with the ideas of dreams and hallucinations. Specifically, the class project involved working collectively, and in four dedicated groups, to build a dream machine* andresearch the idea of neuro-diversity and perception-diversity.The four groups were: designers, who constructed the dream machine; social media recorders, who developed a multi-platform media campaign for the project from inception to implementation, including documenting how the other groups worked and researched their areas; music composers who designed a soundtrack to accompany the machine; and multi-media poster designers, who researched the history and culture of the original dream machine to create a series of poster images. Each group required specific research focus as well as an interdisciplinary exchange across all the groups. In many ways we see this as 'confluence in action', breaking down disciplinary barriers to explore new ways of thinking about complex issues and ideas. Our presentationwill articulate three key aspects of the project: how by working across multiple disciplines (notably, creativity studies, arts and humanities, cognitive sciences, communications) we came to understand better the confluence of ideas in practice; how various elements of social media can be utilized to explore wider philosophical and aesthetic issues; and how our University's program in Creative and Cultural Industries provided ways to connect across a wide and diverse audience to engage in the interdisciplinary nature of knowledge. In addition to the presentation, we would like to bring the dream machine to the conference so others might experience its hallucinatory effects and better appreciate the relationship between research and practice.*The dream machine was originally designed by the artist Brion Gysin and has been used in research to explore the idea of neuro-diversity and perception-diversity.

De Jesus, Ryan

Institution: ***NC - Fayetteville State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Antonio Ball *Garrett Davis* *Ryan De Jesus*
Taryn Rozier *Adriel Alvarez-Collazo* *Daniel Bigler*
Ashley Sutherland

Abstract Name: Vision Guided Drone Flight

Drones are increasingly being used for reconnaissance, tracking, and inspection of locations that are difficult to access. Our team's research is to create increased autonomy for drone flight in physically confined environments. Our team is currently using the Tello EDU drones which can be programmed using the Python programming language. It, allows us to utilize OpenCV in conjunction with the Tello drone's built-in camera. The OpenCV software library is an Open-Source Computer Vision software. Computer Vision (CV) is the area within Artificial Intelligence (AI) that builds algorithms for computing machines to be able to make autonomous decisions based on visual data. OpenCV has built-in functions for a wide range of visual intelligence tasks including object detection. We're making use of April Tags which allows us to visually tag locations in physical space. Current work is focused on developing software for the drone which will enable it to fly through a gate to enter a confined space without collisions. In our research so far we have found that using the AprilTags to identify the border of the gate opening is an effective approach for guiding the flight path of the drone so it can enter the gate collision free. We, have also found that it is possible to incorporate YOLO, which is a CV algorithm for object detection for being able to identify objects within the field of vision of the flying drone's camera. Potential future uses for vision guided drones is the ability to navigate through environments and around obstacles to find people or objects of interest. The Tello drone's ability to fly as a swarm allows it to communicate with other drones, run tasks in parallel, to speed up task completion. Future research efforts will be directed towards swarming and task parallelization.

De Joya, Julianna

Institution: *CA - California State University - Long Beach*

Discipline: Education

Author/Contributors:
Shuhua An,
Julianna De Joya,
Joshua Ortega

Abstract Name: **Analyzing Interdisciplinary Teaching on Utilization of Math and Health Children's Books to Support Diverse K-8 Children?s Math Learning in Urban Classrooms**

This project aimed at 1) analyzing pre-service teachers' interdisciplinary teaching using math and health children's books and 2) identifying difficulties and challenges in a diverse learning environment with this interdisciplinary approach in urban K-8 classrooms in Southern California. About 78 pre-service participants from three math method classes participated in this study. Data collection includes pre- and post-questionnaires that assess their disposition and knowledge of interdisciplinary teaching, their creation of math and health children's books, and their reports of fieldwork teaching from the children's books. Data analysis includes both quantitative and qualitative methods. Quantitative methods were used to analyze the differences in pre-service teachers' disposition, knowledge of interdisciplinary teaching, children's math skills, health awareness and their disposition toward STEAM learning. Qualitative methods were used to analyze the approaches of interdisciplinary teaching used by the pre-service teachers, and to analyze the difficulties and challenges in a diverse learning environment. The preliminary analysis shows that the pre-service teachers were able to use a variety of ways in teaching math and health children's books in their fieldwork, and, as a result, their knowledge of interdisciplinary teaching and disposition were improved. There are some difficulties and challenges in children's learning: suggestions were identified for more effective interdisciplinary teaching, such as using manipulatives and teaching vocabularies before reading.

De Leon, Leanne

Institution: *CA - California State University - Fullerton*

Discipline: Biology

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Brandon Quintana,
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Trina Miller

Abstract Name: **DO NATURAL HABITATS SUPPORT BETTER BIVALVE HEALTH RELATIVE TO HUMAN-INTRODUCED HABITATS?**

Estuarine habitats worldwide have been extensively modified by human-introduced structures such as seawalls. Human-introduced structures may favor non-indigenous species (NIS), but few studies have directly compared species' health (i.e. condition index) on various habitat types. NIS Mytilus galloprovincialisis a dominant space occupier on seawalls throughout Southern CA estuaries including Newport Bay. In a preliminary study, ithad better conditions on natural cobble vs. human-introduced seawall (2-way ANOVA, site*habitat, p=0.0001)but tidal elevation was not controlled, confounding our ability to discern a habitat effect. Lower tidal elevation should improve species condition due to longer immersion time, so for this follow-up study, we hypothesized that condition index (CI) would vary both across habitats and among tidal elevations. M. galloprovincialis were collected from a seawall and from cobbles at a site in upper Newport Bay, CA while recording tidal elevation for each individual. M. galloprovincialis experienced a nominally significant habitat*elevation interaction (2-way ANOVA, elevation*substrate, p=0.0595) with higher CI at lower elevations on seawalls only, and higher CI on cobble versus seawall but only at higher tidal elevations. Understanding habitat and tidal elevation effects on the health of a broader selection of both native and non-native bivalves will inform future management decisions about the use of natural and anthropogenic habitats.

Dean, Dallas

Institution: *NC - Western Carolina University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Dallas Dean *Rangika Koralege*

Abstract Name: **Bovine Serum Albumin Encapsulated Poly-L-Lysine-Graft-Poly(ethylene) Glycol (PLL-g-PEG) Nanoparticles: Synthesis, Characterization, and Evaluation of Stability in Serum**

Nanotechnology and the use of nanomaterials has caused rapid development in the process of diagnosis and treatment of diseases.Therapeutic proteins have been shown to be an effective treatment against a variety of diseases.Protein therapeutics can be actively targeted towards malignant cells using cell surface receptors and/or other markers specifically associated with or overexpressed on tumors versus healthy tissue. However, protein therapeutics have intrinsic drawbacks such as low stability, short circulating lifetime in the blood stream, and low catalytic activity under physiological conditions. To address these drawbacks our primary goal of this project is to synthesize and characterize a model protein, bovine serum albumin (BSA), encapsulated PLL-g-PEG polymer nanoparticles. Additionally, this project will provide useful insight into using albumin-based nanoparticles as carriers in nanomedicine. The successful encapsulation of catalytically active BSA in nanoparticles and assessing their stability in serum at physiological conditions are important for the therapeutic efficacy of these particles. PLL-g-PEG co-polymer was successfully synthesized and characterized using1H NMR spectroscopy. Nanoparticles were formed through electrostatic attraction of the cationic backbone of the PLL-g-PEG copolymer and negatively charged BSA. The average hydrodynamic diameter of these nanoparticles was 104 nm. Polyacrylamide gel electrophoresis (PAGE) was used to analyze the extent of BSA encapsulation. According to PAGE data, there were no free proteins present in our nanoparticle formulations confirming that all the BSA has been encapsulated. These nanoparticles are stable in serum at physiological conditions for up to 5 days. Long term stability studies in serum, catalytic activity studies of encapsulated BSA, and compatibility assays of these nanoparticles with red blood cells are currently in progress and will also be presented.

DeAnda, Graciela

Institution: *SD - University of South Dakota*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Graciela DeAnda

Abstract Name: **Migration Act (Who are Migrant Workers?)**

Migrant Workers make upa large part of the Agricultural Industryof the United States.Manyof them happen to beundocumentedworkers who, while working hard to supply needed labor for a variety of regional agricultural and manufacturing employers, live and work in constant fear of repercussions and possible deportation. Many others are here legally, but still face difficulties inspired by information spread in news andother sources of the media that often tell only fragments of the layered and complex story of the migrants and their communities, and what they bring to the communities that they are now a part of. My focus is to,hopefully,bring an added awareness and an overall element of understanding to the South Dakota Community, by photographing them in the context of their communities and in the places where they work, and the environments where they play. I believe that Migrant Workers are under appreciated and deserve a place and a voice in this regional agricultural community for which they hope to be a positive addition, as well as a valued source of added cultural diversity. Migrant people undertake many risks and emotional strain to provide for their families and their communities. They are a community of people who make a great positive impact on the places where they settle, bringing needed labor, cultural richness,economic growth and development, and the expanse of colors that make up a diverse population.

Deau, Jordan

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Emma Loucks *Sean Babasin* *Jordan Deau*
Beth Kondro *Michael Holly*

Abstract Name: Low Cost Filter Media for the Removal of Phosphorus in Agricultural Runoff Treatment Systems (ARTS)

Seasonal hypoxia of lakes in the Midwest, Gulf of Mexico, and surface waters around the world as a result of excessive algal production, has a detrimental effect on the local aquatic species, environment, and recreation. Despite investments in point source reductions, seasonal hypoxia is persistent, in part due to non-point agricultural sources of phosphorus (P) (35% of total P load to Lake Michigan). Agricultural runoff treatment systems (ARTS), consisting of sedimentation basins and phosphorus removal structures, are an effective field treatment to reduce nutrient pollution .pollution. Numerous media (>80) for phosphorus removal structures have been investigated for their P removal potential and the hydraulic conductivity; Ca, Fe, Mg and Al content of media are important factors. Reactive media derived from waste products would create a product from waste, extending time prior to disposal, supporting a circular economy. Waste residuals (e.g. drinking water treatment residuals, wood waste, vegetative waste) will be modified (through metal additions, heat treatment, pelletizing, and binder addition) for and evaluated for dissolved P removal from agricultural runoff.. Treatment potential of modified waste media will be measured using flow through lab scale reactors constructed out of 0.75-inch diameter PVC pipe. Columns will be completed in triplicate for each media. Influent and effluent samples will be collected every 5 to 10 hours until effluent P is >50% of influent P. Ortho-phosphorus will be measured in collected samples using a discrete analyzer (Seal AQ300) at UWGB. Media will be designed to maximize P sorption capacity, hydraulic conductivity, mechanical strength, efficacy in high flow systems (< 10 min retention times), and reuse potential; minimize toxic side effects, energy consumption, and cost, critical to adoption. Results from flow through analysis will guide selection of reactive media deployed for field evaluation.

Decanio, Justin

Institution: ***IL - North Central College***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Justin Decanio

Abstract Name: Comic Book of the Complexities of a Young Man's Mental Health

Remembrance is a comic book illustrating the complexities of mental health. Through fantastical imagery embedded into everyday situations, the book provides a glimpse into a young man's mundane life. Pulling from personal journal entries, I created these comic strips through traditional and digital illustrations.The project began with selecting entries from personal journals around common themes or imagery. These entries reflect on my life as a first-gen college student and an only child with two families, while also helping to find peace with my experiences. After selecting the entries, I referenced well-known mythological stories to visualize the emotions. For example, the book starts with a drawing of me in my graduation gown falling through a black hole and rolling a rock up a hill like Sisyphus, referring to the time when I graduated with my associates and was feeling lost about what's next. Through metaphors like this, I conceptualized the entries into stories and brainstormed distinct compositions with pencil drawings and other traditional mediums. Using Procreate, I finalized the illustrations as colored, digital drawings.The book is connected through the central theme of mental health and the main character's environment. Each page is a stand alone story and does not need the context of another page to be complete. However, all the pages that jump through time using different colors produce an abstracted autobiography when read together. There is no text to encourage deeper and more universal interpretation through visual language. Instead of words, metaphors such as black holes and quicksand are used to communicate the character's psyche.Remembrance was a cathartic project that helped me process my life as a first-gen student, an aspiring teacher, and a practicing artist. By sharing it with a wider audience, I hope that others with similar experiences feel heard, understood, and could relate.

Decker, Catalina

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kira Haus *Marshall Apps* *Catalina Decker*

Abstract Name: **Implementing a Biocompatible Foam to Improve Tumor Ablation**

Biocompatible materials can be utilized to improve current medical techniques, leading to improved patient recovery. Tumor ablation is a current cancer removal procedure that will benefit from the application of a biocompatible foam. The procedure involves a needle-like probe which can burn or freeze the cancerous area of interest. In an attempt to protect the surrounding areas from extreme temperatures, current methods use saline or carbon dioxide to separate the healthy tissue from the cancerous site. However, the effects of gravity cause a loss of separation between the targeted area and healthy tissue. As a result, the patient may suffer from postoperative pain due to the lack of contact with the separation medium. The purpose of this project is to develop a biocompatible foam composed of FDA approved materials that will maintain contact with target tissue and withstand extreme temperatures of the ablation probe. Foam has mechanical properties of stability and stiffness, as well as insulative properties. Characterization of stability and stiffness includes tracking the rate of foam collapse through time-lapse photography. Both foam preparation variables and external variables have been tested to ensure foam stability for the ablation procedure, and for biocompatibility. Through these experiments, an optimal method was generated to provide a foam that will last the duration of the ablation procedure and eventually dissipate in the body cavity. In addition to foam stability and stiffness, the insulative properties of the foam were quantified using thermochromic tissue mimics. Further experimentation involved additional characterization methods including rheology and pendant drop tensiometry. Significant progress in lab experiments has allowed for further investigation through in vivo studies, as well as preparation for clinical trials. Evaluation of the foam via lab experimentation allows for clinical application of the material, with the ultimate goal of improving cancer treatment and minimizing patient risk.

Dee, Madison

Institution: *CA - Aspiring Scholars Directed Research Program*

Discipline: Biology

Author/Contributors:
Madison Dee,
Sofia Penttila,
Sreenidhi Challagundla,
Sanjana Selvaraj

Abstract Name: **The In-silico and In-vitro Characterization of Epigenetic Drugs (BET Protein Inhibitors and Related BET Pathway Targets) on a Colorectal Cancer Cell Line**

Bromodomain and extra-terminal domain (BET) proteins have been linked to increases in oncogene expression and tumor progression in a wide array of cancers. Previous research on BET proteins has demonstrated that BET inhibitors (BETi) and other drugs in combination can moderately reduce cancer cell proliferation in colorectal cancer. Limited treatments exist for colorectal cancer due to its malignant nature and existing treatments are often costly or ineffective. Our research centers around determining potential BETi in colorectal cancer through in-silico research and testing identified drug candidates in an in-vitro setting. While previous research has been conducted on BETi, few studies examine the effects of BETi in colorectal cancer. So far, we have created a list of one hundred possible BETi drugs. By utilizing a deep learning Cancer Drug Response (Deep CDR) prediction algorithm, we will further narrow down our list of potential drug candidates. We are also working on identifying additional targets in HCT116 cells that are related to the BET protein pathway to expand our research. In order to do this, we are analyzing gene expression datasets using R and ranking candidates related to the BET protein pathway. Once the in-silico analysis is complete, the drugs will be ordered/synthesized and tested on HCT116 colorectal cancer cells. They will be tested through MTT Assays, Western Blot and qPCR and the ones with the most BETi properties as well as the least harmful side effects will be selected. With more BETis available, we hope to increase the number of cancer treatment options for patients.

Dehari, Jeton

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
Jeton Dehari,
Jon Zheng

Abstract Name: **Phylogenetic Diversification of Monkeypox and Related Poxviridae**

Monkey pox (hereinafter MPXV) is a zoonotic virus that is localized in Western and Central Africa but has recently spread to 82 non-endemic countries with roughly 66,000 cases worldwide, as of September, 2022 (CDC.org). MPXV can enter the body via the oral or skin routes. MPXV mainly targets theairway epithelium leading to infection of nearby immune cells. For the skin route, the virus first infects keratinocytes and fibroblasts. Similarly, to the oral route, MPXV thereafter infects nearby immune cells, such as dendritic cells, and macrophages. In both cases, the infected immune cells allow MPXV to gain access to a draining lymph node. It is hypothesized that an infected draining lymph node subsequently becomes a site of MPXV virion dissemination. The WHO declared MPXV an international health emergency in July of this year (aha.org) and advised caution regarding travel to countries with rising caseloads. As a virus of the Orthopoxvirus genus, which contains the Vaccinia virus that causes smallpox disease, MPXV has a similar double-stranded DNA genome, life cycle, and mode of transmission. Double-stranded DNA (ds DNA) genomes are generally associated with lower mutation rates. In contrast, the current outbreak exhibits an unexpectedly high level of mutations,roughly 6 times the typical rate for ds viral DNA. To pinpoint the evolutionary origins of this elevated mutation rate, we will: (1) reconstruct phylogenetic relationships among MPXV and its relatives in the Poxviridae, using MrBayes; (2) calibrate a penalized-likelihood molecular clock, using BEAST, to estimate divergence times within the clade; (3) compare rates of molecular evolution for selected proteins among Poxviridae sub-lineages, using Mesquite; and (4) model patterns of structural evolution in viral proteins using PyMol. These results have the potential to shed light on the underlying causes of shifts inprotein evolution rates and the shifting dynamics interactions with host immune systems.

Dehaven, Lexie

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Dana Berry *Lexie Dehaven* *Stephanie Rudzinski*
Ebony Lang

Abstract Name: **Skill Assessment of Caregivers who Serve People with Intellectual and Developmental Disabilities**

This quantitative study assesses the knowledge and skill of caregivers who serve people with Intellectual and Developmental Disabilities (IDD) and explores the aspects of training they received prior and during their time serving the population. In order to test the skill of caregivers, studentresearchers created a survey with 15 qualitative and quantitative questions. There are 4 demographic questions that ask about age, gender, and ethnicity; and there are 11 questions that ask about prior experience, personal opinions of their training, and certifications. The collected data was received by sending out an electronic version of the survey to caregivers for people with IDD. Using 75 participants, this research aims to see how effective training is when used in practice. The research allows student researchers to explore solutions to maximize effectiveness. Once the data was received, it was entered into an excel codingsheet and copied into SPSS. This software provided student researchers with insight about their data based on correlations between prior training, certification and years of experience compared to their comfort level as caregivers. Student researchers used quantitative analysis such as Measures of Central Tendency, Chi-Square tests, and Correlations to find any statistical significance. The nonparametric testing that wasconducted for the research is the goodness of fit method. Student researchers thenran correlations between the variables of caregivers' age, gender, and education level.Overall, results indicate that participants felt the training they receive was beneficial, positive, and thorough (40%, n=30). The results also indicated that most of the participants had a high comfort level when it comes to caring for individuals with IDD (84%, n=63). The qualitative data is observed from open-ended questions. Student researchers intend to use these results to change training to maximize skillset and improve living conditions for people living with Intellectual and Developmental Disabilities.

Dekan, Morgan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Morgan Dekan *Annabelle Howat* *Abby McCullough*

Abstract Name: Examining Low-Income Household Shopping with Supplemental Nutrition Assistance Program Benefits at the Eau Claire Downtown Farmers? Market Using the Market Match Incentive Program From 2018-2022

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. In 2020, COVID-19 increased the number of families facing food insecurity while the ECFM also faced challenges regarding how to operate safely. This poster uses administrative data to analyze shopping by SNAP households at the ECDFM using the MMP between 2018-2022. The number of SNAP households shopping at the ECDFM increased in 2020 and 2021 while the associated spending also increased in both years as the SNAP caseload was rising due to the pandemic. As the SNAP caseload declined to about the same level as in 2020, the number of SNAP households shopping at the ECDFM using the MMP and the corresponding spending declined in 2022. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at the ECDFM using the MMP over this period. This poster is connected to a another submitted poster analyzing a variety of data from surveys of SNAP households shopping at the ECDFM using the MMP during these years.

Dekker, Annika

Institution: ***MI - Hope College***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Annika Dekker

Abstract Name: Mother of India: Queen Victoria & Duleep Singh

Duleep Singh, the last maharajah of the Punjab, was deposed in 1849 by the British East India Company. At eleven years old, his kingdom, sovereignty, and rightful possessions were taken from him, and he was put under the care of a Scottish doctor. In 1854, he traveled to England and met Queen Victoria. She "adopted" him as her godson, bringing him into the life of the court. My research analyzes the relationship between Duleep Singh and Victoria. This presentation will begin with an introduction to the circumstances of Duleep Singh being deposed by the British. Then, I will go over my analysis of the interactions, events, and correspondence that surrounded Victoria and Duleep Singh's relationship from 1854 to 1857. I claim that Victoria maintained the belief that Duleep Singh could assimilate into English society and expectations while also reveling in his "exoticness." I also claim that she showed sympathetic support in the face of his loss of power and title, but failed to understand the gravity of his reality and upheld limits to her support that kept British interests at the forefront. First, I analyze the portrait that Victoria commissioned of Duleep Singh to argue that to Victoria he was both exotic and English. Then, I conduct a detailed examination of the correspondence Victoria wrote that addressed Duleep Singh to reveal that she engaged in baseline sympathies on his behalf but failed to understand the reality of his situation as a conquered subject. Next, I analyze Lady Login's account of Victoria presenting the Koh-i-Noor diamond to Duleep Singh to illustrate the unbalanced power dynamic that defined their relationship. Lastly, I analyze more letters from Victoria that show clear support for Duleep Singh while also revealing the limits of her support that stemmed from keeping British interests at the forefront.

Delacruz, Josselyn

Institution: *OK - University of Central Oklahoma*

Discipline: Art/Music History

Author/Contributors:
Josselyn De La Cruz

Abstract Name: The Aztec?s Powerful and Influential Design

This paper will discuss just how influential and meticulous ancient Aztec culture and rituals have been on art and design today. The Aztec empire lived as one of the many early civilizations with a thriving community and like many other early Mesoamerican cultures, a strong affiliation with religious beliefs and practices. They frequently and primarily utilized this religious motive to express significant iconography and experiences in their architecture, stonework, jewelry, and ceremonial garments. This iconography often depicted Gods, warriors, and virtues that communicate religion, creation, and prosperity, and these elaborate pieces were created solely for religious and sacrificial purposes. These geometric and detail-oriented pieces were extremely intricate and created only by exceptionally skilled craftsmen. Although it is difficult to fully understand the entirety of their principles of design it is apparent this influenced much of Mexican and Central-American design functions throughout history.

DeLapp, Thomas

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: English/Linguistics

Author/Contributors:
Grace Schutte

Abstract Name: Invisibly Here: The Future of Life Writing in Writing Centers

In writing studies, Jonathan Alexander has employed the term “life writing” to describe the work of encapsulating the complexities of one’s lived experiences through writing (“Writing a Queer Life” 1). For us, such a theory extends the work of writing center scholars considering ways in which private and public struggles take shape through writing centers (Denny, Mundy, Naydan, Sévère, Sicari). These struggles remain increasingly tied to questions around agency and expression in the context of larger unstable social and cultural contexts. And so, we define “life writing” more broadly to encapsulate the work of helping students find meaning, voice, and agency within larger systems of inequity. Indeed, this roundtable starts by positioning life writing as a bridge between personal and academic. Yet, it builds toward offering life writing as praxis—as a writing center method for connecting with writers in a world torn apart, so often, these days.Questions around how students engage, and grow, are always tied to embodied struggles and histories they share with us, through conversation. These struggles manifest through traditional academic prose. At the same time, life writing recognizes writing centers as spaces that welcome creative fiction and nonfiction writing to process mental health and pain—that take seriously students navigating invisible struggles, including histories of shame and repression. We consider, too, how it enables us to better understand advocating for students navigating social anxieties.Presenters will begin by reviewing life writing as an emerging genre and lens we see taking shape in our writing center. Next, before opening for discussion, presenters offer what it might take—including community partnerships-- to develop life writing a genre, as a critical modality, and as a writing center method. We look forward to hearing ideas from other writing centers practitioners.

Dellinger, Clare

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Clare Dellinger,
Pete Knutson

Abstract Name: Where Have All the Office Hours Gone?: A Qualitative Study of University Instructor/Student Immediacy During and After the Covd-19 Pandemic

This study seeks to understand the effects of Covid-19 pandemic on teacher-student immediacy, and how classroom habits may have changed in a post pandemic world. This study's research questions are two-fold, first, how do students perceive changes to student-teacher immediacy during and post-pandemic? Second, how do professors/teachers perceive changes to teach-student immediacy during and post-pandemic? For this study, students and professors will participate in in-depth interviews to understand their experiences and perspectives on how student-teacher immediacy has been affected during and after the pandemic. Student participants include those who tookcourses prior to, during, and post pandemic, as the primary audience and subjects affected by the potential changes they saw in immediacy, as well as their own classroom engagement habits.Professor/instructor participants will be those who taught prior to, during, and post pandemic to understand how the pandemic affected their ability to maintain immediacy in the classroom, as well as changed how it affected their ability to deliver class material effectively. The researchers will conduct a thematic analysis and use a theory-guided approach when examining the interview transcripts. These themes will hopefully reveal specific experiences students and professors had during the pandemic and give insight as to how both professors and students can help create more immediacy in unique or challenging circumstances.The goal of this research is to identify changes made by professors during the pandemic that either had positive or negative effects on students in their ability to gain valuable relationships with their professors as well as educate on the importance of quality teacher-student immediacy even in difficult circumstances.

Dempsey, Kalani

Institution: ***FL - University of West Florida***

Discipline: Chemistry/Materials Science

Author/Contributors:
Kalani Dempsey *Josh Pfneisel* *Kayla Spencer*
Flavia Miccolis Martins Per *Anne Harper* *Pam Benz*

Abstract Name: Determining Hydroxyl Radical Production and Metal Contaminants in Marinas near Downtown Pensacola

Environmental contamination from petroleum products present hazards to marine life and humans. Implications of petroleum contamination include negative impact on the biosphere and potential reduction in tourism in impacted areas, leading to economic decline. Sources of oil contamination include industrial collection points, recreational and commercial motor vehicles. Analysis of local water bodies in the Pensacola, FL area help uncover potential sources of contamination from recreational boating. Consequences of petroleum contamination on wildlife include damage to DNA, reproductive impairments, and organ mutations. Damage to aquatic life has long lasting effects on businesses who operate under the assurance they can produce services backed by marine life.Effects on the health of the marine ecosystem are demonstrated in studies of adult fish showcasing reproductive impairments, reduced growth, and organ and fin damage. This can cause havoc on the life cycle of any marine life exposed to the petroleum introduced into their ecosystem. Economic repercussions for the fishermen, restaurants, and businesses that survive off of tourism will occur if not resolved.This project will examine photochemical production of hydroxyl radical (·OH) various samples including accommodated fractions (WAFs) created from crude oil (Jay, FL) and water sampled from local marinas. WAFs incubated with Jay, FL crude oil will be collected after 7 days and tested for ·OH formation using the method of Zhou and Mopper via high-performance liquid chromatography with UV/VIS detection (1). WAFs and water samples from local marinas will be tested for ·OH formation (using the HPLC method mentioned previously) as well as trace metals by ICP-OES. Trace metals such as iron are known to produce ·OH photochemically through the photo-Fenton reaction (2, 3). This will help determine the source of ·OH formation in locally obtained waters.

Deng, Nancy

Institution: *NY - Brooklyn College*

Discipline: **Biology**

Author/Contributors:
Nancy Deng

Abstract Name: **Long-COVID Trends and Risk Factors**

My project aims to explore the neurological changes underlying post-COVID neurological symptoms as well as to identify trends and possible risk factors in surveys of COVID survivors for developing these symptoms.SARS-CoV-2 is a highly transmissible and pathogenic coronavirus that emerged in late 2019 and is responsible for the COVID-19 pandemic. It has since infected more than 625 million people and caused more than 6 million deaths globally. Studies have shown that the effects of COVID-19 linger even after the infection has been resolved. There is strong evidence of neurological abnormalities post-COVID infection such as loss of taste and smell and difficulty thinking or concentrating, commonly known as “brain fog.”Studies have shown that individuals who develop more severe cases of SARS-CoV-2 infections experienced higher levels and more severe degrees of cognitive impairment. However, even those with mild or asymptomatic SARS-CoV-2 infections experienced some degree of cognitive impairment. The neurological mechanisms underlying these impairments are currently unknown, but researchers have found changes in the brain regions associated with memory and sensation post-COVID infection. Considering the number of COVID-19 cases in the USA is almost 100 million, most individuals experiencing these symptoms may be going undiagnosed. Unfortunately, there is a lack of screening protocols for detecting cognitive impairments in survivors of COVID-19. Therefore, it is unknown how many people experience post-COVID neurological symptoms.My research aims to analyze surveys of COVID-19 survivors and people with long-COVID. I plan to use various statistical methods to determine if long-COVID is more prevalent in some populations than others. Some of the variables I plan to examine are differences between age groups, gender, race/ethnicity, education level, disability status, and state/location. This research will help identify trends that would aid in identifying at-risk populations and developing screening and therapeutic options for these individuals.

Deng, Yihong

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Yihong Deng,
Sierra Kolodjski

Abstract Name: **Development of Whey Protein-Lignin Based Film Materials for Food Packaging Applications**

Whey protein (WP) and lignin are by-products of cheese industry and the pulp and paper industry, respectively. This project aims to combine WP, glycerol, and lignin to develop biodegradable films with improved water barrier and mechanical strengths for food packaging applications. Reconstituted WP solutions (6% w/v) were held in a water bath with glycerol and lignin (if applicable) at different temperatures (60-95°C) for 30 mins to induce different levels of WP denaturation.SDS-PAGE showed that the film-forming solution prepared at 90°C for 30 min resulted in 88.7% WP denaturation, while it was only 12.3% for WP prepared at 60C for 30 min. Further results revealed that WP denaturation increased available thiol groups, which were likely responsible for forming the polymeric structure of WP films. With altered polymeric structures, different levels of WP denaturation altered film properties such as film thickness, water vapor permeability (WVP), and water solubility. Both WVP and water solubility were inversely correlated with the percent denaturation of WP.WVP of 60°C and 90°C WP films was 2.20 ± 0.34 mg·m-1·hr-1·kPa-1 and 1.83 ± 0.41 mg·m-1·hr-1·kPa-1, respectively. WVP of 20°C film could not be measured as the film started to rupture within 3-4 hrs of the WVP measurement, indicating its inability to block moisture due to its extremely hygroscopic nature. As for water solubility, 20°C and 60 °C WP films were completely dissolved within 24 h, whereas the water solubility of 90°C WP films was 58.36%±1.8% after 24 h. The results indicate that WP denaturation is critical to the properties of the resultant WP films. Lignin-incorporated WP films are prepared and currently being tested to study the effects of different types and concentrations of lignin on improving film properties, especially mechanical strength, light barrier and antioxidative properties.

Denig, Karisa

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biology

Author/Contributors:
Karisa Denig,
Callie Jo Otto

Abstract Name: Analysis of PHYB Mutations Identified in a Genetic Enhancer Screen in Arabidopsis thaliana

The plant Arabidopsis thaliana contains the genes LRB1 and LRB2 (Light-Response BTB 1 and 2) that encode proteins functioning as target adaptors in complexes that initiate degradation of the phytochrome red/far-red-light receptors. Plants containing mutations of both the LRB1 and 2 genes are hypersensitive to red-light, because there are increased levels of the phytochromes in these lines. Genetic screens were conducted in the Gingerich lab to identify mutations that increased the red-light hypersensitivity of LRB1 and LRB2 double mutant plants. Such mutations might occur in additional genes involved in red light responses. In several of the lines the putative “enhancer” mutations were found to be within the PHYB gene, which encodes the phytochrome acting as the major red-light receptor in Arabidopsis. Recent work has focused specifically on two of the enhancer mutant lines, each of which has a point mutation in the PHYB coding region which is predicted to change a single amino acid in the encoded phytochrome B protein. We believe these forms of phytochrome with the single amino acid change may have increased activity and we have been characterizing the effects of these mutations on light responses and phytochrome action. One of enhancer mutant lines also has a blue-light hypersensitive phenotype, and we have conducted genotype/phenotype co-segregation experiments to determine if the PHYB mutation in that line may also be responsible for that phenotype. Progress on these projects will be presented.

Denison, Anakah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biology

Author/Contributors:
Anakah Denison

Abstract Name: Intraspecific variation in the Galapagos mistletoe, a potential endemic species

The Galapagos Islands are renowned as an ecological hotspot for their distinct environment and number of endemic species; new species are still being described with relative regularity to this day in the archipelago. The Charles Darwin Research Station is the primary institution categorizing and investigating the biodiversity of the Galapagos and contains the most complete record of the islands' plant and fungi species in its herbarium as an invaluable resource for research. Mistletoe grow on every continent except Antarctica, with over a thousand species worldwide—however, only one is found on the Galapagos islands as their only parasitic plant.The aim of this investigation was to determine if there is regional distinction within Galapagos mistletoe associated with elevation, island, host, or locality, and furthermore, if the Galapagos mistletoe is a distinct, smaller endemic species from the mainland mistletoe species found in Ecuador.In this observational study, I measured 68 mounted herbarium specimens of Phoradendron berteroanum from the CDRS Herbarium, collected from 1963 to 2022, recording the leaf length/width, internode length, floral spike length and number of floral segments for each specimen. Measurements were taken by hand with the aid of a mounted magnifying lens. In preliminary analyses, elevation was found to be a significant stratifier for mistletoe samples. Determining if this is a physiologically distinct endemic species will provide acurrent description of the islands’ flora and will provide accurate information for a conservation status ranking. Endemic species are subject to higher protections than non-endemic species, and as the islands’ only parasitic plant, found in the vulnerable highlands, Galapagos mistletoe should be protected and further investigated if found to be endemic in order to preserve the biodiversity of this fragile and unique ecosystem.

Dennis, Claire

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ethan Olerich,
Claire Dennis,
Easton Blissenbach,
Megan Worzalla,
Jamie Lyman Gingerich

Abstract Name: **Analysis of 2 variants of CERKL, a gene associated with ocular disease**

Genetic testing, including whole genome and exome sequencing, is quickly becoming a standard healthcare practice, especially for patients with rare diseases. While some changes to DNA sequences can be benign, there are several variants that have not been characterized. One large group of these variants are classified as variants of uncertain significance (VUS), as the effects have not been directly studied yet. However, effectively interpreting the relationship between identified variants and disease remains challenging. VUS can include variants that are predicted in silico analyses to affect splicing of the pre-mRNA into mature mRNA. Disruption of splicing can result in loss of a functional gene product due to exon skipping, changes in the reading frame, or introduction of a premature stop codon. In collaboration with PreventionGenetics, our lab analyzes VUS predicted to affect splicing of genes using a minigene system. Briefly, the minigene system involves cloning a single gene segment into a plasmid vector which is transfected into eukaryotic cells. Processed mRNA transcripts are then sequenced to determine the effects of the variant on splicing. We will present our analysis of 2 variants in the CERKL gene and their potential clinical relevance.

Depa, Lauren

Institution: *KY - University of Kentucky*

Discipline: Nursing/Health Science

Author/Contributors:
Lauren Depa,
Yuan Wen,
John McCarthy

Abstract Name: **Mitochondrial Dysfunction in Striated Muscle Is Related to Muscular Dystrophy.**

Background:Duchenne muscular dystrophy (DMD) is a genetic disorder caused by a lack of the dystrophin protein, leading to muscle deterioration and weakness. The current standard of care is glucocorticoid therapy, which focuses on delaying complete loss of muscle function. Although the cause of the disease is genetic, recent studies using a novel and more relevant mouse model of DMD, the D2-mdx mouse, suggest mitochondrial dysfunction is an early event in the disease process. However, the mechanism through which loss of a cytoplasmic structural protein disrupts the electron transport chain is poorly understood. The aim of this study was to investigate how mitochondrial dysfunction is related to weakness in the D2-mdx mouse model of DMD.Methods:Muscle function was assessed by measuring plantarflexion in vivo. Mitochondrial function was assessed using high resolution respirometry, and reactive oxygen species production was measured using AmplexRed fluorescence.Results:Consistent with the literature, we found that D2-mdx mice were significantly weaker, and muscle mitochondrial function was decreased, compared to the control, DBA/2 mice. Further, we found that peak torque was significantly reduced by 44%, which was associated with lower Complex I and II activity in the D2-mdx mice, compared to the control. Additionally, we found that reactive oxygen species production was elevated in D2-mdx mice, compared to the control.Conclusions:Cardiac and skeletal muscle in the D2-mdx murine model of Duchenne muscular dystrophy exhibit lower mitochondrial oxygen consumption capacity and higher reactive oxygen species production. These changes may worsen the muscle weakness that is already present due to loss of the dystrophin gene in Duchenne muscular dystrophy.

Depowski, Nicole

Institution: *NY - Wells College*

Discipline: **FAN Abstract**

Author/Contributors:
Abby Hemmerich *David Durkin* *Nicole Depowski*
Brian Wallace *Chimdimnma Esimai* *George Ude*
Darion A. Isom

Abstract Name: **Panel discussion: Creating a developmental curriculum to build research skills**

In this panel discussion, moderated by Abby Hemmerich, four panel members will share examples of undergraduate research embedded across the curriculum and within individual courses. These examples will highlight principles of research woven through progressive courses in chemistry, psychology, kinesiology, and natural sciences, helping students build skills developmentally from their first year to graduation.David Durkin (co-author, Darion Isom) will discuss a series of integrated labs to grow research skills throughout the middle years of the chemistry major, culminating in an independent, problem-based learning project. Details about the final “Special Project” will be presented; this project requires students to utilize all of their skills to independently design the experiment, request materials, perform of the experiment, and write the research report.Nicole Depowski will present a case study of a psychology program with research introduced at the introductory level, integrated practice across the curriculum, and a capstone senior thesis project. Early exposure to scholarship focuses on locating and reading research, while students gain skills in research ethics and design at the next level. The third year requires use of primary sources, with synthesis and analysis, culminating in a senior thesis project in which students produce their own research.Brian Wallace will discuss the process for building evidence-based practice and research principles into the kinesiology curriculum to prepare students for graduate school or health and fitness professions. Changes to student engagement in research and outcomes related to faculty-mentored research will be discussed.Chimdimnma Esimai (co-author,George Ude) will present a series of course-based research experiences that engage a whole class of students in a research question or problem. Although individual projects are restricted to a single course, students experience multiple opportunities for these projects across the curriculum, providing complementary content and developmental progression in skills.

Derhaag, Jeremy T.

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Roman M. Faught,
Mark Gutierrez,
Samantha A. Sunnarborg,
Jeremy T. Derhaag,
Spencer A. Schoeck

Abstract Name: **Radiation dose studies in fruit flies with 350keV electrons**

The effects of beta radiation on fruit flies (Drosophila Melanogaster) were studied using the Applied Nuclear Science lab AN400 accelerator modified for electron acceleration and extraction. Dose-dependent effects up to 800 Gy have been observed, with significant effects well below the LD-50 dose for 2-day old larvae. These effects include reduced larvae and aborted development to adulthood. The goal of establishing a population of viable adults in samples showing clear radiation dose effects to study inherent radiation resistance has now been met. The data gathered in the process of this experiment will be used to further calibrate the accelerator for future research.

Deriche, Zina

Institution: *MN - University of Minnesota - Duluth*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Zina Deriche

Abstract Name: **Cocoa Oil Extraction and Energy Content Measurements**

The goal of this research was to find a sustainable alternative to palm oil, which is unethically produced and environmentally destructive. Therefore, thisresearch examinesthree oil extraction methods from Columbiancocoa beans. Bomb calorimetry is also used to measure the energy content of the extracted oil. The three methods include hot oil press extraction, Broma extraction method, and Soxhlet extraction. Methods were compared to measurethe most oil removed from the cocoa beans. The most convenient extraction method is the hot oil press method. The Soxhlet extraction method is the best method for receiving pure cocoa oil without any solid contamination due to the process. Due to the conditions of the lab and the fermented cocoa beans provided, the Broma extraction method was not successful in this research. The 2-hour Soxhlet extraction produced a 0.4% oil recovery yield;and a 0.6% oil recovery yield for the 4-hour extraction. The average energy found in the cocoa solid residue was determined to be 4475.28 cal/g with an oil percent of 33.25 %. The average energy found in cocoa oil was found to be 7695.62 cal/g, with an oil percent of 81.96%. This study aimed to compare different methods of extracting cocoa oil and investigate the energy produced from the cocoa solids to numerically investigate the effect each method has in extracting cocoa.

Desai, Dhairya

Institution: *NC - University of North Carolina at Charlotte*

Discipline: **Public Health**

Author/Contributors:
Dhairya Desai

Abstract Name: **Comparison of Asthma Patient Visits By Demographics for Coach McLungs Implementation**

This state-wide study aims to summarize the demographic characteristics of asthma-related patient visits over the past 5 years and to serve as a pre-analysis of the demographic statistics before the implementation of Coach McLungs. Coach McLungs is a virtual program that generates a treatment plan for the patient and provider with both their inputs. A final sample of 21 family medicine and pediatric clinics based in Charlotte and its surrounding areas were recruited in 2022 to provide demographic input of their patients aged 5 to 17. This sample in turn allows for an exceptional analysis of the patient's race, sex, ethnicity, and gender in relation to asthma treatment and documentation. The analysis showed that over the past 5 years, 60.9% of the visits were made by male patients, while the other 39.1% were female patients. The analysis of race showed that White/Caucasian patients had a slightly higher number of visits than Black/African American patients at 44.3% vs. 44.5%. However, White/Caucasian patients had on average 5.0 outpatient visits, while Black/African American patients had on average 5.7 visits. These results suggest that Black/African American patients have more outpatient utilization than White/Caucasian patients. A further analysis of this observation shows that there is no significant difference between the average number of outpatient visits by race, as a two-sample t-test resulted in a p-value of 0.1004. In conclusion, race disparities do present themselves with outpatient utilization, but not at a significant level. Further research is being conducted on the significance of sex disparities; therefore, no correlation can be determined on these factors right now.

Desai, Purav

Institution: ***VA - Virginia Commonwealth University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Purav Desai

Abstract Name: Increasing Participation in Mindfulness-Based Art Therapy in Teenage Oncology Patients

The incidence of cancer in adolescents has risen dramatically in the last 30 years, with cancer as the fourth leading cause of death in the teenage age group. Adolescent patients typically present with a higher symptom burden and rates of depression and other psychological disorders. The inclusion of mindfulness-based art therapy (MBAT) programs in patient treatment has been shown to decrease the prevalence of mental and physical trauma endured by cancer patients. While adolescent patients benefit greatly from these programs, the lack of tailored activities creates lower engagement amongst the teenage cancer population. This review aims to explore how increasing adolescent cancer patients' participation in mindfulness-based art therapy programs may address their higher physical and mental health issues.Adolescent cancer patients face disruptions in their developmental trajectory and thus experience unique problems such as a loss of independence and abnormal relationship with peers compared to other age groups of patients that can trigger higher levels of stress, anxiety, and depression. MBAT programs have been proven to reduce stress and mental and physical trauma, and teenage oncology patients stand to benefit the most from MBAT activities despite participating the least in them. A review of the literature on MBAT programs and cancer patients found a link between increased participation and engagement in MBAT and decreased levels of mental and physical health trauma. For example, studies on the biological pathway behind pain in cancer patients found that increased levels of stress and anxiety that cancer patients experience open a neuronal gating mechanism that results in a higher perception of pain. This research proposes that increased engagement in MBAT activities may benefit adolescent cancer patients in terms of their physical and mental health. Due to these findings, a tailored program including MBAT activities made for teenagers should be developed by clinicians and nurses.

DeSalvo, Jack

Institution: ***WI - Carthage College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Jack DeSalvo *Giana Apostoli* *Cameryn Eickstead*
Olivia Wolf *Alexandra Rynders* *Sarah Terrill*
Daniel Miller

Abstract Name: Energy Balance Influences on Avoidance Behavior in Wistar-Kyoto and Sprague-Dawley Rats

Previous research has shown physiological state changes caused by caloric deficits can attenuate behavioral responses to stress. While these behavioral and endocrine stress responses during negative energy balance seem adaptive, as they may promote food seeking behaviors, the underlying mechanisms remain poorly understood. Our study seeks to probe specific neuropeptide effects on the role of physiological state in guiding avoidance behavior in Wistar-Kyoto (WKY) rats. WKY rats show consistent behavioral inhibition (BI), as demonstrated by performance in open field testing and enhanced acquisition in signaled lever press avoidance relative to Sprague-Dawley (SD) rats, which serve as non-behaviorally inhibited (NBI) controls. Here female WKY (n = 8) and SD (n = 8) rats were trained on a partial predictability signaled lever press avoidance task in which a tone conditioned stimulus (CS) signaled a foot shock unconditioned stimulus (US) only 50% of the time. We sought to determine how overnight fasting may contribute to guiding avoidance behaviors. Our data demonstrate that following overnight fast, non-behaviorally inhibited SD rats significantly increased avoidance responses to the level of avoidance demonstrated by behaviorally inhibited WKY rats. Overnight fasting elicits a variety of physiological changes that could contribute to avoidance behavior. It is well established that fasting increases circulating levels of the hunger hormone ghrelin, thus we hypothesized that central ghrelin signaling may contribute to the observed behavioral effect of the overnight fast. The same cohort of rats were implanted with cannulas targeting the lateral ventricle. Rats received intra-LV injections of ghrelin or saline 45 minutes prior to the signaled lever press avoidance session. Surprisingly, central injection of ghrelin significantly reduced avoidance performance in WKY rats and did not affect avoidance in SD rats. Ongoing analyses will assess neuronal activation in the hindbrain following avoidance in fed and fasted WKY and SD rats.

DeSoto, Eric

Institution: *CA - California State University - Monterey Bay*

Discipline: **Education**

Author/Contributors:
Jasmin Azad-Khan,
Rogers Walker,
Cindy Ziker,
Corin Slown

Abstract Name: **Supporting Student Success in a Classroom Setting via Course Undergraduate Research Experiences**

Course-based undergraduate research experiences (CUREs) provide valuable research knowledge and skills to students. Supporting faculty as they develop and implement CUREs ensures sustainability and the quality of student learning experiences. There are few qualitative studies of faculty perspectives on the faculty experiences implementing CURES. This research provides insights into what is working well and what needs to change when facilitating professional learning associated with CUREs. Faculty and Students completed interviews via a protocol approved by the CSUMB IRB. When interviewed, faculty and students responded to a series of questions about their CUREs and their experiences. Researchers identified themes associated with faculty participation in the CURE Faculty Fellows program, as well as themes about student learning. Faculty affirmed the value of the CURE Faculty Fellows program, and students believed research in a classroom setting to be beneficial. Several themes have emerged from the analysis including: the structure of CUREs, common activities, as well as strategies for belonging, persistence, and developing identity as a scholar. Analysis of the themes led to the conclusion that faculty viewed students as having mixed responses when engaging in research, while students felt that conducting research was both challenging and exciting.

Deterding, Sloane

Institution: *AR - University of Arkansas*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Sloane Deterding

Abstract Name: **Relationship Between Inclusion in Schools and College Student's Subsequent Comfort with Disabled Peoples**

I sought to determine whether past inclusion in schools correlated with current comfort levels in interacting with people with disabilities in undergraduate students at John Brown University. Little previous research has been done regarding the efficacy of inclusion on the future attitudes of nondisabled peers, but what has been done indicates the importance of inclusion and its educational benefit for all involved. My hypothesis was that students with a background in inclusive elementary or high schools will have higher comfort levels and more involvement with people with disabilities post-high school than those in largely separate elementary and high schools. In order to test this, an online survey was conducted among college-aged students. Participants in this survey were chosen randomly from a list of all undergraduate students at John Brown University. Analysis revealed a significant correlation between elementary school inclusion levels and later comfort with people with disabilities with an effect size of R=0.38 and a 95% confidence interval of [0.02, 0.65]. There was also a positive correlation between inclusion in elementary and high schools combined and later comfort. These results provide evidence for the connection between inclusion and improved disabled/non-disabled interactions. Future research should be focused on inclusion's effects in high school and studies of a wider population. Keywords: disability, inclusion, mainstreaming, efficacy

Determan, Serena

Institution: ***WI - Marquette University***

Discipline: Physics/Astronomy

Author/Contributors:
Serena Determan,
J.R. Sanders

Abstract Name: Development of a Shape-Memory-Alloy-Based Remote Actuator for Precision Optical Measurement Systems

In the Laser Interferometer Gravitational-Wave Observatory (LIGO), there is limited capacity to adjust the positioning of small optics. This results in system-wide optical losses between 40-50%. Currently employed methods of actuation for these optics obstruct the backside of the optic. This makes them incompatible for use with lenses and limiting potential avenues for system control. This project's goal is to develop a mechanism using Shape Memory Alloys (SMAs) forremote actuation in precision optical systems. SMAs are alloys that change their shape to a "remembered" state when the temperature of the SMA increases. For our purposes we are using a simple circuit that induces Joule heating to actuate the SMAs. To test the efficacy of SMA-based actuation, a tabletop prototype has been developed to show how precise of a control we can have while using SMAs. We present progress on this prototype and preliminary performance measurements, with an emphasis on suitability for future use in precision optical control. This prototype can lead to a larger application of SMAs used to adjust equipmentin LIGO which will help to reduce optical loss and improve observation quality.

Devine, Alexander

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Chemistry/Materials Science

Author/Contributors:
Stephen Maldonado *Dylan Vitt* *Joshua Mendoza*
Alexander Devine *Jack Liu* *Jun Kit Lim*

Abstract Name: Developing a Machine Learning Algorithm using Pattern Recognition to Analyze Experimental Data from Photoelectrochemical Systems

The purpose of this research is to develop a machine learning algorithm that will use pattern recognition to match experimental voltammograms with model responses to understand the physical parameters of an artificial photosynthetic system. Photosynthesis, the process in which plants convert light energy from the sun into chemical energy, can be replicated artificially in a photoelectrochemical reaction powered by natural light that generates hydrogen fuel at a semiconductor electrode. Semiconductors, such as silicon, are an essential part of converting light into usable energy. The potential and current recorded with semiconductor electrodes as working electrodes and separate reference; counter electrodes contain useful information about the reactions if proper analysis can be performed. Performing data analysis on the data collected from cyclic voltammetry allows the photoelectrochemical reactions to be examined in a systematic manner to determine the best conditions for conducting the reactions. Experimental variables include the type of semiconductor used to construct the electrode, the surface area of the semiconductor, and the dopant density of the semiconductor. The developed algorithm allows for more precise measurement of the system parameters that control the reaction properties. The present data were recorded in the absence of light to control the variability of the experiment. Future experiments will utilize visible light to drive the current that powers the reactions. This algorithm will aid in the understanding of the reactions taking place to move forward towards the end goal of creating hydrogen fuel solely through the use of natural light.

DeVol, Samson

Institution: *OR - Oregon State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Samson DeVol

Abstract Name: **Using Audio Manipulation to Interact with Hearing Loss**

Since the advent of technology, methods used for assistance and education surrounding the hard of hearing community have been focused on increasing the hearing capability of those with hearing loss, or supplementing auditory senses with the use of visual aids. This current strategy of hearing assistance focuses on changing how those who are hard of hearing experience sounds, rather than changing the sounds that are experienced. Using modern programming languages we are able to host software in a web application that takes an input audio file and passes it through a Fast Fourier Transform algorithm, so that the audio can be modified and visualized as a sum of frequencies rather than amplitude. In transforming the audio this way, we can apply volume filters for specified frequency ranges within the web application interface. The resulting audio output then mimics how someones specific sense of hearing loss would sound, and the web application visualizations would replicate an audio feed in the format of an audiogram. The development of this audio manipulation software allows someone with a full range of hearing to hear the input sounds as heard by someone with a more limited range of hearing, as well as see how the audio is manipulated. In developing these tools; audiologists, education faculty, family and friends of individuals with hearing loss, sound designers and more, can create auditory experiences that are more accessible for a larger population of hearing levels.

DeWit, Jessica

Institution: *MT - Montana State University - Bozeman*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Jessica DeWit

Abstract Name: **Biofilm Formation Contributes to Antibiotic Resistance in the Sheep Respiratory Pathogen Mycoplasma ovipneumoniae**

Mycoplasma ovipneumoniae (M. ovi) is a respiratory pathogen associated with polymicrobial pneumonia in domestic and bighorn sheep. Increased antibiotic resistance has been reported in sheep infected with M. ovi, but the mechanism of this resistance is not well characterized. One possible mechanism of interest is the formation of biofilms. In our research, we show that M. ovi can form biofilms and investigated whether these biofilms lead to increased antibiotic resistance.To grow M. ovi biofilms, we incubated M. ovi in wells with glass coverslips placed at the bottom. Biofilms attached to the glass coverslip, allowing for staining and imaging via brightfield and confocal microscopy. Antibiotic susceptibility was investigated using a serial dilution of gentamicin ranging from 128 µg/mL to 1 µg/mL. The minimal inhibitory concentration (MIC) was defined as the lowest concentration of gentamicin where M. ovi failed to grow.Two strains of M. ovi, a reference strain (Y98) and field isolate (MSU-NW4), showed robust biofilmformation when cultured for 8 days in an aerobic environment. Biofilm formation was visualized using crystal violet staining, and formation of a characteristic 3-D structure was demonstrated using confocal imaging and a SYTO9/PI stain. M. ovi biofilms exhibited increased antibiotic resistance, with a reduction in biomass for concentrations at or above 32 µg/mL for gentamicin compared to a 4 µg/mL MIC for planktonic populations.We are the first to demonstrate robust formation of biofilms by multiple M. ovi strains and to show that M. ovi biofilms have increased resistance to antibiotic treatment.

Dexheimer, Calla

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Calla Dexheimer *Giulia Mattana* *Dylan Berry*

Abstract Name: **A Computer-Based Model to Capture Gastric Electrophysiology Through Bio-Impedance Analysis**

The ability to monitor the bioelectrical activity of the gastrointestinal tract, in a non-invasive manner is essential for the diagnosis and management of functional gastrointestinal disorders. Electrical bio-impedance (Bio-Z) analysis is a promising method to acquire a wide range of human electrophysiological activities, through wearable electrodes. The Bio-Z sensing system consists of a four-electrode configuration on the body surface in which the two outer electrodes deliver a sinusoidal excitation signal transcutaneously, and the two inner electrodes acquire a differential potential which will be conditioned, processed, and mapped to the electrophysiology of interest.To this end, we developed a computer-based model of the human gastric system in COMSOL Multiphysics, a simulation platform based on the finite element method. Through the model, we simulated the Bio-Z analysis to capture the gastric electrophysiology, through the body surface. The objective of the project is to simulate the penetration depth of the Bio-Z analysis as a function of frequency and find the optimum frequency for the clinical data collection on human subjects. We developed the model of the abdomen through four layers of skin, fat, muscle, and peritoneum. Besides, we developed the model of the gastrointestinal tract through four layers of serosa, muscularis, submucosa, and mucosa. The model of four AgCl electrodes was added to the model of biological layers, too. The frequency-dependent permittivity and conductivity parameters were assigned to each biological layer for the simulation at each Bio-Z frequency. In COMSOL, we generated the electric fields resulting from the applied sinusoidal excitation signals at various frequencies in the range of 10 kHz to 250 kHz to the stomach, transcutaneously. Then, we plotted the power spectrums of the electric fields and compared them at the penetration level of the gastric tract.

Deza, Isabella

Institution: *VA - George Mason University*

Discipline: Communication/Journalism

Author/Contributors:
Isabella Deza

Abstract Name: **Perceptions of Veterans from Hollywood Movies**

Portrayal of veterans in Hollywood movies may create polarized perceptions on military service members. Most existing research on media coverage of veterans and its impact on individual perceptions focus on news media and social platforms. However, there's a lack of research on how Hollywood movies could shift an individual's view on veterans. In this study, Cultivation Theory will be used to analyze how watching Hollywood movies could influence an individual's viewpoint. This study will help provide evidence in this area. In this study, individuals will be randomly placed in two different groups and they will view different movie scenes where veterans are portrayed in a positive vs. negative light. Participants will be students from George Mason University recruited through a variety of different ways, such as flyers, kiosk events, and a University platform called Mason 360. In the experiment, participants will answer baseline questions about their initial opinion of veterans and then complete another questionnaire after viewing the assigned videos. Data collection will be done by mid-March 2023 and analysis will be concluded by the end of March 2023. Findings of this experiment will help us understand movie portrayals as a source of influence on public perceptions of veterans.

Dhantu, Saidharshana

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biology**

Author/Contributors:
Saidharshana Dhantu,
Kirk Habegger,
Shelly Nason,
Teayoun Kim

Abstract Name: **The role of Cry1 in Glucagon-receptor (GCGR) signaling and GCGR-mediated hepatic glucose metabolism.**

Glucagon (GCG) is a 29-amino acid peptide released from alpha cells of the pancreatic islets. Glucagon is best known for its counterregulatory actions against insulin-stimulated hypoglycemia via hepatic glycogenolysis and gluconeogenesis. However, glucagon also regulates a range of actions such as amino acid catabolism, lipolysis, ketogenesis, fatty acid oxidation, satiety, thermogenesis, energy expenditure, and bile acid metabolism. These GCG-mediated improvements in lipid and energy metabolism may be desirable in patients with the metabolic syndrome. Consequently, glucagon-receptor (GCGR) agonism has been added to classic incretin hormones in single-molecule, multi-receptor co-agonists that elicit superior therapeutic efficacy in metabolically compromised rodent models and emerging clinical trials. Importantly, the addition of GCGR activity to these molecules did not impair glucose metabolism. Therefore, understanding the mechanisms by which GCGR regulates glucose homeostasis is of great value.Previous studies suggest Cry1 regulates GCGR-signaling via inhibition of cAMP in the liver. Intriguingly, our data supports that GCGR stimulates hepatic Cry1 expression, suggesting a feedback loop between these pathways. However, temporal regulation of this feedback as well as its overall effect on hepatic glucose output and whole-body glucose homeostasis is incompletely understood. Our studies utilize GCGR pharmacology and shRNA knockdown of Cry1 to interrogate this signaling axis in primary hepatocytes and cultured cell lines. Further investigation in this area will improve our understanding of GCGR signaling and its regulation of glucose homeostasis.

Di Bernardo, Gabrielle

Institution: *CA - Chapman University*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Gabrielle Di Bernardo

Abstract Name: **Hollywood and Marxism**

Must a production be independent of Hollywood in order to truly convey a Marxist ideology? May, for example, a television show such as Succession (2018-22) or film such as The Menu (2022) truly criticize corporate America and the one percent when coming from corporations and studios such as Warner Brothers, and Walt Disney? While theorists such as Theodore Adorno and Max Horkheimer would argue that such productions are regardless, oppressive, it is important to explore in what production contexts can media successfully criticize the system it is produced in. Further, how do these productions compare to an independently produced film such as Pier Paolo Pasolini's 1975 Salò or 120 Days of Sodomy. This, considering the nature of its production and distribution, is able to criticize the nation of Italy, fascism, capitalism, materialism, and those who benefit from such structures. Through the lens of Jean-Louis Baudry's 1970 paper, 'Ideological Effects of the Basic Cinematographic Apparatus' I am able to analyze these three pieces in the entirety of their social field. It is that media such as Succession and The Menu are not able to criticize the system they are developed in because those who provide the funds along with the final approval are the same people these pieces are trying to condemn. Meanwhile, Pasolini is able to stay true to his ideology with Salò as there is no 'man' for the production to answer to. At the final light of the candle, it is not possible for a product of a capitalist system to in whole truly criticize that structure.

Di Domenico, Riccardo

Institution: ***IN - University of Evansville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Riccardo Di Domenico Di Domenico *Justin Fritch* *Brendon Herrin* *Nick Gibson*

Abstract Name: Variations in System Parameters at Low Energy Input on Thermosiphon Collector Efficiency

A thermosiphon is a system of components that passively generates a closed cycle of flowing water wherein solar energy is stored as useful thermal energy. Systems used in real-world applications contain no mechanical or electrical components, making it useful in areas lacking capable infrastructure. Flow starts in the collector by heating the water, decreasing its density, and creating a buoyant force, which drives the fluid through a hot leg pipe into a raised tank. This heat contained in the tank could be extracted for domestic hot water heating or building supplemental heating applications. The water cools, increasing its density, and sinks down the cold leg pipe and re-enters the collector where the process continues cyclically. Thermistors, located at the collector inlet and outlet pipes, measure system temperatures and an open-bore flowmeter measures flow through the system. During steady-state, a period where flowrate, inlet and outlet temperatures remain relatively constant, collected data is used to calculate the instantaneous efficiency of the system. The discreet efficiency values are then used to calculate overall efficiency. Components of the system allow the ambient temperature around the device to be controlled, a parameter overlooked by most thermosiphon research projects. These components include insulated, removable walls enclosing the device, a fan to circulate the air inside the enclosure, and a space heater and AC unit to control the temperature. Previous research has used high-power input to the collector simulating sunny-days, but current research conducted low-power tests simulating cloudy-days to compare trends across both conditions. The base parameters that are varied and researched are collector angle, hot leg height, cold leg height, hydraulic resistance, and input power. By conducting a range of diverse test series, each investigating the effect of altering a single parameter, the team explored the effects of each system parameter on overall efficiency trends.

DiAlessandro, Amanda

Institution: ***PA - Widener University***

Discipline: Architectural Engineering/Construction Management

Author/Contributors:
Jacqueline Loeliger,
Michael Hutchinson,
Madeline Reynolds,
Amanda DiAlessandro

Abstract Name: HVAC Design of a Performing Arts Center to be Located in Sidney, Australia

This work was done as an entry tothe 2022 HVAC Design Calculation Competition being held by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The complete HVAC design calculations were performed for a large (over 200,000 ft2, over 500 spaces) higher education performing arts building placed in Sydney, Australia.The calculations required the analysis of heating and cooling loads, and determination of the necessary airflow to each space based on usage and size. The HVAC system was then designed and optimized to maximize the building energy efficiency. The project demonstrated compliance with four standards from ASHRAE: 55, 62.1, 90.1, and 189.1, which are thermal comfort, ventilation for indoor air quality, energy standards, and high efficiency, respectively. As first steps, load calculations were performed by hand to find peak amounts of cooling required, and the necessary airflows were determined to meet the required ventilation levels. Next, the use of Carrier's Hourly Analysis Program (HAP) allowed for a more robust look at each of the five hundred and forty-four rooms. This allowed for structural coordination of placing a roof top unit to serve half of the top floor of the building. Special consideration was given to energy efficiency and sustainability. The energy intensity usage was found to be 27.8 kBtu/ft2 which is compliant with expectations from the New Buildings Institute to be within 30 kBtu/ft2. Overall, the project came together to generate detailed floor plans of the entire building and a detailed model to represent the finalized building layout.

Diaz, Anthony

Institution: *NJ - Kean University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Anthony Diaz

Abstract Name: **Text Summarization For E-Commerce Reviews Using NLP Techniques**

Consumers always want the best experience possible. In e-commerce especially, potential customers value finding the best viable product in the least amount of time. User reviews are usually the method by which users make informed decisions on what they want to purchase. Reading user reviews is time-consuming and includes having to search for comments about specific aspects of a product. Thus, in this research, we build a framework that summarizes the lengthy reviews into concise star ratings based on features of the product using Sentiment Analysis and Topic Modeling. The framework uses the Gensim Word2Vec machine learning Python model to pull topics from reviews, giving a sentiment rating to each topic and a concise summary. For example, the user can choose to shop at a pizzeria and start by searching for the word “pizza.” The program will then search through a csv file containing publicly accessible reviews (in this case, Yelp review data) at that specific business. From this, the user will be shown similar topics like “pepperoni,” “cheese,” and “anchovies” via Gensim Word2Vec. The user is then presented with these subtopics and gets a star rating using NRC Emotion Lexicon, as well as a summary of the subtopic using Pipeline Summarizer. The hypothesis is that using this proposed framework will make it easier and quicker for customers to understand the sentiment around the products they are interested in purchasing. The results show that using the framework allows a user to understand the sentiment around certain aspects of a product quicker than just manually reading through reviews. The user also gets a summary of each topic, further increasing their understanding of the sentiment of the product.

Diaz, ERICK

Institution: *CO - University of Colorado at Boulder*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Erick Diaz

Abstract Name: **Design upgrade for a Petawatt class laser**

The objective of this project was to design target chambers and target laser beam transport for laser-created plasma experiments utilizing a Petawatt (PW) class laser. The laser to be used will be an upgrade to the current laser facility at Colorado State University which is known as Advanced Laser for Extreme Photonics (ALEPH). The purpose of the upgrade is to significantly increase the energy of the laser to increase the overall output power from 0.85 PW to 4 PW. This design allows for multiple options in experiments which consist of both short focal length and long focal length focusing optic configurations. Importantly, this system will have two independent beamlines that will allow multibeam experiments to be conducted which include advanced laser wakefield acceleration, inverse Compton scattering, probing the proton stopping power of warm dense matter, and the study ofatomic physics at and above solid density., With short focal length optics,we can expect intense x-ray and gamma-ray flashes for the tomography of dense objects, neutron generation, micro-scale fusion, and ultra- high energy density plasma generation. With long focal length optics, we could expect the acceleration of electrons to GeV energy levels and the generation of coherent x-ray radiation. The work involved extensive use of 3D CAD using Solidworks to design the vacuum chambers and the hardware for the Petawatt class laser pulse compressor. Additionally, the design model underwent rigorous simulations using finite element analysis. This was an important tool to help determine structural integrity as the chambers had both gravitational forces and internal vacuum pressures applied to them. Vibrational analysis was also key in mitigating sources of low vibrations in order to improve laser focusing. This upgrade will be essential as it would provide years of new advancements in the field of plasma physics and extreme photonics.

Diaz-Sanchez, Denisse

Institution: *CT - Eastern Connecticut State University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Denisse Diaz-Sanchez

Abstract Name: **The Sickness**

"The Sickness", a typographic poster design, focuses on raising the public's attention to the problems and negative effects of the American healthcare system. The research that I conducted was concentrated on real-life experiences of those who suffered from the negative effects of the American healthcare system. Through research, I collected countless recollections, including the disheartening case of Susan Finley who lost her job at a company for taking too many sick days. She also lost her health insurance while struggling to recover from pneumonia. Finley passed away from flu-like symptoms after avoiding a doctor's visit she simply could not afford. Stories like these were incorporated into my design, along with dark tones and torn newspaper effects to express the impact they hold. It is critical to recognize how an unprecedented ailment can put a family into incredible disparity. Without universal health care, the US health system forces Americans to feel strongly apprehensive of even calling for an ambulance. The American healthcare system takes advantage of how helpless one can feel when they are denied help in times of need, merely because they cannot meet the price tag. The typography in the design was shaped into a medical syringe, with all the words included correlating to the theme of both America and general health topics. The colors chosen for the type are red, white, and blue, to symbolize the overarching subject of the United States. There is a large dollar sign in the negative space of the syringe overshadowing the other words, to conceptually represent a debate over who the system benefits and helps. I hope that my design can raise the public's attention. We need to break the silent taboo shrouding this problem and push for the system to work for the people, not big pharma or private insurance companies.

DiBiasio-Hudson, Isabel

Institution: *MA - Mount Holyoke College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Isabel DiBiasio-Hudson *Todd Herron*

Abstract Name: **Evaluating a revised protocol for the chamber-specific differentiation of iPSC-derived cardiomyocytes**

The prospective utility of cardiomyocytes (CMs) derived from human induced pluripotent stem cells (iPSCs) is largely dependent on their ability to be efficiently and precisely produced as subtype-differentiated (chamber-specific) tissues. Chamber-specific monolayer and three-dimensional tissues have the potential to revolutionize the study of cardiac disease and drug development as in vitro models of disease and accurate, ethical models for testing the chamber-specific cardiotoxicity of clinical drugs. However, the majority of differentiation approaches to date produce a mixture of atrial and ventricular CMs which, without further treatment, progress to predominantly (but not exclusively) ventricular cardiomyocytes (VCMs) over 15-30 days. Treating cardiac progenitors with retinoic acid (RA) produces sub-specified atrial cardiomyocytes (ACMs) showing strong atrial protein markers when these cells are further treated on RPMI 1640 media with no glucose and high levels of lactate to select for exclusively metabolic CMs. The goal of this study was to determine whether healthy atrial cardiomyocytes could be produced with high specificity through treatment with RA but without the use of metabolic CM selection media. Four batches of ACMs and two of VCMs, all derived from iPSC line 19-9-11, and one human VCM sample were evaluated. Successful ACM differentiation was determined based on functional response (quantified through calcium flux imaging) to cardiac drugs with known effect and Western Blotting analysis of β-myosin heavy chain protein abundance. It was found that while this protocol effectively produces cells in high number with low functional variation and which respond as expected to drug treatment, most ACM/VCM samples tested continue to demonstrate a degree of mixed ACM/VCM protein characteristics. More research is needed to determine and reduce the subtype variability between and within cell lines and determine the timeline of progression of ACMs differentiated by RA addition towards exhibiting VCM characteristics.

Dickerson, Mason

Institution: *CA - Chapman University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Mason Dickerson

Abstract Name: **Affect of the Mystic in Film: Whereof One Cannot Speak, Thereof One Must Make a Movie**

In spite of his broad reaching influence over the field of philosophy, Ludwig Wittgenstein has been curiously neglected in the developing field of media studies, which historically favors continental and post-structuralist approaches to media affect and ideology. With attention to Wittgenstein's discussion of the function of language, picture theory, and the limits of what language can access (the mystic), this paper seeks to recontextualize Wittgenstein's philosophical project – specifically, his singular treatise Tractatus Logico-Philosophicus – within the realm of filmmaking and viewership. The paper proposes a Wittgensteinian photo-ontology utilizing his picture theory, constitutively suggesting cinema, as a medium which stimulates sight and sound to often profound somatic effect/affect in the viewer, can capture the limits of language and being: the "mystic" in the same way our own sensory data in life can experience but fail to translate, or signify directly. Cinema is therefore framed as a form of "silence," playing with Wittgenstein's famous quote – we cannot speak directly of the limits of experience, but we can show it through images in the same way we experience it in life. Cinema is the language of the mystic, and through cinema the mystic can be explored and felt as an end in itself – the paper explores the short works of filmmakers such as Apichatpong Weerasethakul and Stan Brakhage in this capacity, and further the possibility of "mystic" style in popular filmmaking. Wittgenstein can be used as an extension or alternate approach to a cinematic theory of affect, as a fundamental experience which denies language in its ontological primacy.

Dickey, Margaret

Institution: *MN - St. Olaf College*

Discipline: Nursing/Health Science

Author/Contributors:
Margaret Dickey

Abstract Name: **Presumptive Diagnosis of Alcohol as the Etiology of Altered Mental Status in Collegiate EMS**

Altered mental status (AMS) is a common emergency call on college campuses, and for Collegiate-Based Emergency Medical Service (CBEMS) providers this chief complaint is frequently found secondary to alcohol intoxication. Although it is important to consider alcohol when determining the etiology of AMS patients, a presumptive diagnosis of intoxication without a thorough differential diagnosis can delay or prevent vital treatments of life threats. The purpose of this study is to determine if CBEMS providers make premature diagnoses of alcohol intoxication as the etiology of AMS due to underutilization of key AMS assessments. This study was conducted as a retrospective analysis of de-identified Patient Care Reports (PCRs) submitted between 2015-2022 from one service. Each PCR was compared to predetermined criteria for AMS and examined for evidence of alcohol consumption and key assessments for AMS differential diagnosis (blood glucose, pupils, SpO2, head trauma assessment, temperature, stroke assessment). Differential diagnoses were underutilized on all AMS calls with respect to key assessments; furthermore, there was a 15% decrease in assessments completed when alcohol consumption was reported compared to when it was not (0.05). These results may suggest an underestimation by CBEMS providers of the seriousness of AMS and intoxication as medical emergencies.

Dickinson, Hannah

Institution: *UT - Weber State University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Hannah Dickison

Abstract Name: Efficacy of Cryotherapy Modalities

Cryotherapy and compression are frequently used treatments for acute injury and post-operative healing, but the pricing of these treatments isa major concern in today's healthcare world. A common cryotherapy modality used following orthopedic surgeries or injuries is the GameReady which circulates ice water through a sleeve while compressing the area, however, it is quite expensive (~$4000). A relatively new option for cooling and compression is a device called Hyperice, a sleeve with fans attached to blow cold air, and is less expensive (~$400). In this study, we compared the two modalities for effectiveness in reducing intramuscular temperature. We inserted a thermocouple into the largest girth of the subject's lower leg (1 cm deep to the layer of subcutaneous fat) and measured the decrease in temperature due during a 30-minute treatment and during 25 minutes of rewarming after the treatment was removed. 20 subjects volunteered to participate in this randomized, cross-over trial (10 males, 10 females, age=24.65 ± 2.7 years, height= 173.86 ± 9.83 cm, weight= 78.22 ±16.17 kg). There was a statistically significant difference between the two treatments over time, F(11,209)=9.08, p=0.001, observed power= 0.947. By 5 minutes into the treatment, there were statistically significant differences between the devices, which continued throughout the entire treatment and rewarming phase, with the GameReady causing larger decreases in intramuscular temperatures. We also saw a clinically significant difference (2.1℃) between the two treatments at most of the time points. The GameReady lowered the intramuscular temperature more than the hyperice did, indicating that it is more effective, but it is also more expensive. Future research should evaluate the cost-effectiveness of other cryotherapy/compression modalities

Dickrell, Heather

Institution: *WI - University of Wisconsin-Stout*

Discipline: Social Work

Author/Contributors:
Heather Dickrell,
Candice Maier

Abstract Name: Exploring Family Dynamics, Mental Health and Well-Being Among Former Foster College Youth

The impact of foster family environment on mental health and well-being has been studied; however less is known regarding the experiences of foster youth who have transitioned out of foster care and are now pursuing post-high school education. This study aimed to explore foster college-aged students' experiences of their foster family environment and their mental health and well-being. Using a Qualtrics survey of closed- and open- ended survey questions, we gathered data from 56 former foster youth from around the United States. Results demonstrated an array of experiences from positive to negative regarding former foster youths' perceptions toward their foster family support, dynamics, and their own mental health. Overall, we found that our sample reported more mild symptoms of anxiety compared to more severe levels which are often found in other research working with this population. Suggestions for future research are discussed.Keywords: foster college aged youth, family dynamics, mental health, well-being

Diehl, Lydia

Institution: *MT - Montana State University - Bozeman*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Lydia Diehl,
Hannah Goemann,
Brent Peyton

Abstract Name: **Rhizosphere Microbiome Structure Under Drought Stress**

Shifting precipitation regimes caused by climate change necessitate extensive research of plant responses to drought. Under stressful conditions such as drought, diverse rhizosphere microbiomes can improve plant fitness by increasing plant growth and supporting nutrient uptake. These interactions occur through the release of carbon-rich photosynthates from plant roots to the rhizosphere. In return for the readily-available carbon, microbial mutualists are able to increase nutrient turnover and water availability for the plant. However, it is unknown how historical climate regimes influence plant-microbial interactions. Here we show that the rhizosphere microbiome assemblies of the montana-native blue grama (Bouteloua gracilis) prairie grass under drought conditions are distinctly different from when grown under ambient conditions regardless of historical climate regime. Blue grama grown in drought-adapted rhizosphere inoculum showed less indication of physiological stress and recovered from drought more quickly than blue grama grown with non-drought-adapted inoculum. The results indicate that under drought conditions blue grama may select for a unique root microbiome structure that enhances survival. Variation in root microbiome assemblages due to climatic conditions could be applied to agricultural crops to maintain crop yield despite changing climatic conditions. More research regarding specific microbial species that increase plant survival under drought stress could assist in developing agricultural practices that can adapt to meet the needs of climate change.

Dierwechter, Grace

Institution: *WI - Concordia University*

Discipline: Biology

Author/Contributors:
Grace Dierwechter

Abstract Name: **Selective Anti-Cancer Effects of Piper methysticum (Kava) on Human Cancer Cell Lines**

Kava is a common beverage in the South Pacific derived from the roots of the plant Piper methysticum. It is known to act as a sedative that acts as an anxiolytic, aiding in the reduction of stress and anxiety. This product is not isolated only to the South Pacific but is available for purchase in many countries including the United States. Interestingly, the instances of lung cancer rates in the South Pacific are below average despite high tobacco use, and previous research suggests that the consumption of kava in these populations may play a role in this phenomenon. Previous studies have identified specific constituents of kava (e.g. flavokawains) that display antiproliferative effects against cancer cell lines. However, novel components of kava and the synergistic interactions of both known and unknown compounds in preventing cancer cell growth are poorly understood. To isolate compounds found within cude kava root powder, a hot and cold hexane and methanol extraction was followed by flash chromatography. These fractions were used in various concentrations to determine antiproliferative effects on human cancer cell lines compared to non-cancer cells. Cytotoxicity, and proliferation of cultured cell lines including lung cancer cells (H232A), cervical cancer cells (HeLa), and human primary non-cancer fibroblast cells (NHDF) were determined using an MTT colorimetric assay. Treatment with specific Kava isolates exhibited a significant reduction in cell proliferation on various cell lines, while also having limited anti-proliferative effects on NHDF cells. This study suggests that kava may have novel compounds that function to prevent cancer progression leading to further cancer therapeutic approaches.

Dietert, Rachel

Institution: *NC - Elon University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Rachel Dietert *Heather Barker*

Abstract Name: **Investigating the Intersection of COVID and Mental Health: A Text Mining Approach**

This research explores how topic modeling can be used to describe the intersection of the conversations about Covid-19 and mental health using Twitter data. To identify themes around the conversations people are currently having about these Covid-19 and mental health, this project analyzed approximately 2,000 Tweets that mentioned both mental health and COVID-19. Using traditional qualitative methods of identifying themes of textual data by reading and re-reading all the Tweets is a daunting task. For this project, we compared how a semi-supervised and unsupervised topic modeling method performed in analyzing the Twitter data. Seeded topic modeling, a form of text mining using semi-supervised learning methods, was used to identify common themes among the Tweets. Seeded topic modeling is a semi-supervised learning method that identifies topics among large textual datasets, using a predetermined seeded dictionary of terms. The seeded dictionary was created using traditional qualitative methods to analyze 30 college students' free response essays on their experiences with mental health and COVID-19. The essays were analyzed using the Systems Theory Framework, using five levels of interaction: individual, microsystem, mesosystem, macrosystem, and exosystem. The unsupervised topic modeling method creates topics, or themes, using a latent dirichlet allocation model. These themes consist of a collection of words associated with each topic that then must be interpreted by the researcher. The topic modeling approaches were validated and compared to determine which participants were assigned themes that aligned to their Tweet. Findings show that the unsupervised topic model assigned themes more appropriately than the supervised topic model. The findings of this research will help those in psychology to understand better what concerns people are still facing between the intersection of COVID-19 and mental health. The methodology will also prove useful for those interested in analyzing large amounts of textual data using topic modeling.

Dietrich, Cassie

Institution: *PA - Slippery Rock University of Pennsylvania*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Cassie Dietrich

Abstract Name: **The Confluence of Dance, Photography, and Lighting**

Compelling images require a confluence of ideas to thoughtfully provoke emotions in the viewer. In my dance photography practice, I find the intersection of movement, lighting, and location most helpful in my pursuit of a storytelling image. To construct an image, I incorporate unique individuals who contribute dialogue to the creative process. These participants are artistically driven people with interests in many different mediums including dance and theatre. My gallery of photos tentatively titled "Midday Dreaming" were inspired by the work of Shana Simmons in shooting her upcoming film Living Landscapes. To explore the ideas presented in her film, I took dancers to McConnell's Mill to experiment with structured improvisations with nature; I gave them prompts as well as creative liberties to create still photographs of movement. Prompts guided dancers in the exploration of the landscape's texture, construction, and principles of lighting. As a choreographer, lighting designer, and photographer, this project helped me consider the impact of nature on dancers and the potential for this to influence my choreographic and lighting design choices. This endeavor also cultivated a collaborative environment of dancers and artists who contributed dialogue and perspective to the project. This oral presentation featuring images and reflections will offer inspiration and insight into collaborative practices among dancers, photographers, and lighting designers.

Dietzler, Andrew

Institution: *MN - University of Minnesota - Duluth*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Drew Dietzler,
Brendan Schaeppi,
Jared Boots

Abstract Name: **Linguistic Relativity in Bilingual Speakers**

The Sapir-Whorf Hypothesis has shown that the language we speak alters how we perceive the world around us. For example, a group of German and Spanish participants might be asked to describe pictures (e.g., a bridge), which is a feminine gendered word in German and a masculine gendered word in Spanish. Native German speakers would use more adjectives associated with feminine attributes (e.g., elegant and beautiful), while Spanish speakers used words with more masculine attributes, such as “sturdy” and “strong”. This study sought to extend the Sapir-Whorf Hypothesis by investigating whether Linguistic Relativity would generalize to non-gendered languages among bilingual speakers. That is, would bilingual speakers exhibit linguistic relativity when describing objects in English.We hypothesized that participants would demonstrate no linguistic relativity when explaining words in English. We further hypothesized that fluency in the target language (e.g., Spanish) would correlate withlinguistic relativity.Overall, there was no evidence of linguistic relativity in English among bilingual speakers. However, when we analyzed the results separately by sex, we found that while males did not exhibit any linguistic relativity in English, females did trend towards significance. Among females, there appeared to be a stronger correlation for the feminine themed objects (r = .33, N = 33, p = .058, r2 = .11) as compared to the masculine themed objects(r = .29, N = 33, p = .099, r2 = .08). Therefore, among females, feminine objects were more likely to be correctly explained with adjectives that were stereotyped to be feminine. While masculine objects were less likely to be correctly explained with adjectives that were stereotyped to be masculine. This research provides additional data for a greater understanding of how bilingual individuals perceive the world around them, elucidating the link between language and culture, while also clarifying the extent/limitsof the Sapir-Whorf Hypothesis.

DiGiacomo-Hippenstiel, Emilie

Institution: *PA - Shippensburg University*

Discipline: **Social Work**

Author/Contributors:
Katryna Moland *Emma Tennant* *Emilie DiGiacomo-Hippenstiel*

Abstract Name: **Burnout, Compassion Fatigue, and Compassion Satisfaction in the Social Work Field Practicum**

Field social work students are often in contact with traumatized clients who go through a variety of negative life experiences such as abuse, disaster, drug dependency, crime, and illness. These students are experiencing vicarious exposure to such negative life events, and therefore, may develop compassion fatigue and burnout. Whereas both compassion fatigue and burnout report negative consequences of working with traumatized clients, compassion satisfaction adversely contributes to the positive well-being of the workers themselves. Compassion satisfaction stems from the satisfaction that is gained from helping others, and this feeling may serve to limit the effects of both burnout and compassion fatigue.This research serves the following purposes: addressing the existence and implications of burnout and compassion fatigue among social work students in field practicum; assisting in determining the need for additional attention in burnout- and compassion-fatigue-prevention for future field practicum students; determining the prevalence of compassion satisfaction among students; and drawing on the benefits of compassion satisfaction to provide strategies to better social work education.The research uses a classic experimental design: pretest/posttest, control/experimental group design. Social Work students who are in field practicum of the Spring 2023 semester are the experimental group, while students who are in Preparation for Practicum class, will be the control group. Both groups took a 30 item self-report questionnaire called the Professional Quality of Life Scale (ProQOL). This scale is equipped with subscales for burnout, compassion fatigue, and compassion satisfaction, thus measuring both the positive and negative effects in working with vulnerable and traumatized clients. As this is an experimental design, both groups took the questionnaire twice – once in the Fall and once in the Spring. This questionnaire assesses the three variables to see if they have fluctuated with more prolonged experience to working with clients, in terms of the experimental group.

DiGrande, Caroline

Institution: *NC - Elon University*

Discipline: **Environmental Studies**

Author/Contributors:
Caroline DiGrande

Abstract Name: **Waste-Deep in Covid: The effects of COVID-19 on waste accumulation and sustainability programming on college campuses**

The demand for disposable products like hand sanitizers, wipes, cleaning supplies, and plastic bags has increased dramatically since the spring of 2020. Quantifying the environmental impacts of this increased consumption, however, has proven difficult and the environmental effects of COVID-19 on college campuses has yet to be addressed. This is a critical gap, for while universities serve as think tanks for solutions to real-world problems, they also produce heavy waste streams and have their own unique waste generation as a result of the communal living of young adults. This dynamic echoed thousands of times across the United States alone must be studied within the context of COVID-19 regulations in order to understand the true implications of the pandemic on society and sustainability initiatives in the United States. This research captures the observations and suggestions of Sustainability Coordinators, Environmental Services Directors, and others with similar positions within university environments regarding changes to their sustainability programs and waste accumulation since the establishment of pandemic regulations on campuses. Additionally, the research highlights Elon University as a case study for an in-depth look at waste accumulation and diversion during and after the height of the pandemic. Survey responses of these sustainability leaders are the bulk of the data analyzed for this study, while interviews with a subset of this population augment these results. These data were open coded to unearth common themes related to waste accumulation during the pandemic. Preliminary findings show themes of labor shortages, shifting administrative priorities, and diminishing student involvement to be symptoms of the pandemic within collegiate sustainability programs. Results and conclusions from this study will be used to create pragmatic policy suggestions specific to Elon University sustainability efforts in the future, serving as a resource for other collegiate institutions as well.

DiLissio, Alfred

Institution: *DC - American University*

Discipline: **Sociology**

Author/Contributors:
Alfred DiLissio

Abstract Name: **Abdication, Elite Structure and State-building: The Acquiescence of the Daimyo and its Role in the Creation of the Japanese State**

Traditional theories of elite behavior predict the privileged to resist and suppress any challenges to the status quo that preserves their position (Lachmann 2000). While this prediction is borne out in studies of European revolutions, these models cannot explain cases whereelites relinquish power and submit. Such is the case of the Japanese feudal lords (daimyo), whose collective abdication in 1869enabled the rise of the modern Japanese state. While some explanation of collective abdication has been elucidated in the parliamentarian context (Ermakoff 2008), it has yet to address the process of state formation and its relationship to elite relational structures and their transformations (Wang 2022). This study proposes to analyze the acquiescence of the daimyo to centralization and its role in determining the path of Japanese state development. I argue that the (relatively) non-violent regime transition achieved by the collective abdication of the daimyo enabled the Japanese state's growth in capacity. This growth was possible because the previous weak ties between national and local elites (daimyo) were replaced by the strong ties of samurai, whose independent political action cut across the boundaries of feudal domains and presented a new elite relational structure onto which the Japanese state was built. Focusing on the timeline of feudal abolition, I use social network analysis of samurai ties to demonstrate how elite relational structures shifted from a vertical to a horizontal network as the samurai built relationships across domain boundaries. This network then became the basis for state growth, as it connected actors with a vested interest in centralization to the budding imperial government. This study contributes to the fields of contentious politics and state formation by examining a contradictory case of elite behavior and through its analysis of a non-violent regime transition's effects on state development.

Dillahunt, Zaria

Institution: *NC - Winston-Salem State University*

Discipline: **Physics/Astronomy**

Author/Contributors:
Zaria Dillahunt,
Taniya Ballard,
Krislynn Hawthorne,
Tennille Presley,
Myron Brown

Abstract Name: **An Exploratory Study of the Effect of Varying Musical Genres on Cardioelectricity**

Music is a universal language that tends to have both a positive and negative emotional impact on individuals and affects the body's energy. Based on one's mood and settings, the quality and interpretation of music can be affected in numerous ways. The beats and tempo of a song have an emotional effect,andcanpotentially influence the body's electrical activity such as heart rate, blood pressure or skin conductivity. In this study, we address the impact of a select set of musical genres on skin conductivity of participants by measuring their galvanic skin response (GSR). To correlate, the cell viability of Human Aortic Endothelial Cells (HAoECs) in response to musical genres was also obtained. We hypothesize that both skin conductivity and HAoECs viability will be affected based on genre and tempo. A musical playlist was curated consisting of three musical genres: R&B, Country, and Rap. Each genre had three songs which were played for 120 seconds, followed by a period of silence for 120 seconds. TheHAoECswere exposed to music daily for30min and cell viability was determined after 5 days of exposure. Each participant's electrical response was measured through skin conductivity using a Q-S222 GSR sensor. Our results indicate thatRap had a GSR of1.12±0.05μS, R&B had a GSR of1.19±0.06μS, and country had a GSR of1.28±0.08μS. When consideringcell viability, the cell exposed to music exhibited a greater viability than cells that were not treated with music. The combined results provide insight into the body's electrical response to music as it relates tothe specified genres. We can conclude that variations in musical genres and tempo can moderately influence the cardiovascular properties within the body.

Ding, Yinuo

Institution: *NY - Colgate University*

Discipline: **Sociology**

Author/Contributors:
Yinuo Ding

Abstract Name: **Cultural Capital: How High School Experiences Influence Chinese International Students' Interactions with Peers, Faculty, and Staff**

Although the number of East Asian international college students has increased in recent years, studies show that these students often form few connections with students and faculty on campuses, suggesting that they may not reap the same rewards from their college education as U.S students. Scholars argue that this lack of connection stems from cultural differences and language barriers which hinder their integration into college. Most research, however, focuses on East Asian international students as a whole, with little attention to variation among this population. In this study, I address this issue by examining whether and how high school contexts--U.S. or Abroad--influence their engagement with faculty members in elite U.S. colleges. I recruited 60 interviewees to conduct semi-structured interviews, and half of the participants attended high schools in the United States while the other half attended Chinese high schools. To further address the diversity within the Chinese international student community, I recruited participants from two liberal arts colleges, two public research universities, and two private research universities.I discovered that Chinese international students who attended U.S. high schools are more willing to interact with professors and feel more comfortable during the process since high school dorm or homestay experience provides more exposure to local residents and teachers. Moreover, students who attended Chinese high schools face different challenges in different types of U.S. colleges. Participants studying in liberal arts colleges often found it more challenging to engage in casual talks and develop personal relationships with professors while those in big research universities struggled to reach out to professors effectively. This research shows how colleges should target students' needs when providing student support and how the high school experience can serve as guidance to improve student services, facilitating minority students' contribution to campus diversity.

Dixon, Jacqueline

Institution: ***WI - Marquette University***

Discipline: Philosophy/Religious Studies

Author/Contributors:
Jacqueline Dixon

Abstract Name: The Power of Feminist Philosophy for Women at Work

In this paper, I demonstrate the ways in which feminist insights on reasoning can be applied to the workforce and offer possible means to mitigate sexual violence in corporations. I begin with a brief history of past connections between feminist philosophy and the business world. I utilize a case study, Victoria's Secret, a corporation riddled with sexual violence since its conception. I detail the development, business practices, and recruitment strategies employed by Victoria's Secret. Further, I describe the corporation's downfall, which occurred by and through women coming together, both within the company as employees and models, as well as externally via social media. I assess that these groups of women practiced collective group reasoning, which ultimately led to exposing years of sexual violence. In an effort to support women in other corporations, I propose new modes of work that promote collective consciousness-raising that can be embedded in the culture of a corporation, with the aim that these connections might mitigate sexual violence. Finally, I demonstrate why corporations should look inward to prevent sexual violence, as opposed to looking to societal or legislative changes.

Dlugopolski, Drew

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Biology

Author/Contributors:
Drew Dlugopolski *Nathaly Cormier*

Abstract Name: Identifying Amyloidogenic Proteins within the Acrosome of Bull and Rhesus Macaque Spermatozoa by Mass Spectrometry

Under certain conditions, proteins aggregate into highly orderedcross-beta-sheet structuresknown as amyloids. While amyloids are linked to several human diseases such as Alzheimer's and systemic amyloidosis, they have also been found in conditions that do not cause disease. Currently, they are thought to contribute to the normal functioning of some neuroendocrine cells and reproductive tissues. The findings in mice that amyloid structures are present in epididymal fluid and spermatozoa initially suggested that amyloids might be connected to successful sperm maturation and fertilization.However, most of these studies utilized epididymal and not ejaculated spermatozoa, the latter representing sperm cells that are competent to fertilizein vivo. Previous experiments in our lab with fresh ejaculates of bull and Rhesus macaque revealed that amyloids are present in the acrosomal matrix (AM) isolated from sperm acrosomes and in the detergent-resistant pellet (AM core), as it was previously described in mice. To test the hypothesis that amyloid protein structures are conserved among mammalian species, we isolated the AM and AM core fractions from bovine and macaque ejaculated spermatozoa and identified their protein content by mass spectrophotometry. Our study led to the identificationof more than 600 AM proteins of which~100 were specific to the AM core,including new and previously identifiedmurine proteins. Preliminary results with the protein sequence predictor Waltz determined that the AM proteins Cystatin E/M and lysozyme like-1 and 6 possess motifs associated with amyloidogenic proteins, which make them good candidates for forming amyloid structuresin vivo. A similar proteomic study with human spermatozoa is currently underway in our lab.Demonstrating that amyloid protein structures are evolutionary conserved will strongly suggest they serve an important function in reproduction and help decipher between the mechanisms involved in mammalian fertilization. Ultimately, this might provide insight into amyloid-associated pathologies and treatments.

Do, Angeleia

Institution: *CA - Irvine Valley College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: **Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel Ongoing Investigation**

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Do, Han

Institution: *CO - Regis University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Shannon Killian,
Alexander Stockwell,
Han Do,
Fernanda Bahena,
Stacy Chamberlin

Abstract Name: **Identifying Cognate RNA Sequences of Non-Structural Protein 9 in SARS-CoV-2**

As an RNA+ virus, SARS-CoV-2 infection (COVID 19) leads to direct translation of viral RNA to produce non-structural proteins (Nsp) responsible for viral replication. For example, Nsp 7 and 8 are thought to act as a helicase, Nsp 9 as a single stranded RNA binding protein and Nsp 12 as the replicase essential to the proliferation of the virus. Studies of homologous, Nsp 9 proteins in HSV, MERS, and SARS-CoV-1 indicate this protein binds both DNA and RNA sequences. In SARS-CoV-2, Nsp 9 contains an unusual OB, greek key motif thought to keep RNA single stranded for efficient replication in other viruses. Together these results suggest, Nsp 9 may function in SARS-CoV-2 to keep the viral RNA linear for replication by Nsp 12; however, little is known about the RNA binding requirements or structural contacts and interactions in this protein-RNA complex. Tryptophan fluorescent studies of Nsp 9 have been developed to identify cognate RNA binding sequences and structures. Initial studies indicate binding of an RNA pseudoknot structure in the 3'-untranslated region of the viral RNA. Further analysis of RNA structural requirements for stable Nsp 9 binding will be important in further deciphering the role of Nsp 9 in SARS-CoV-2 as pseudoknot structures in the 5' and 3'-UTR have served as a switch from viral RNA translation to replication and may serve as a handle for control of this ever infecting and mutating virus.

Doan, Victor

Institution: *CA - California State University - Long Beach*

Discipline: English/Linguistics

Author/Contributors:
Victor Doan

Abstract Name: **How did the Cold War Affected Asian American Stories?**

My research project's purpose is to highlight the impact of Western influences, especially post-Cold War influences, in Asian countries and how they affected the output of literature from those countries. I believe the Cold War had a far-reaching, systemic impact through its political conflict between the United States and the Soviet Union in how the politics of the countries they assisted or opposed changed.My methods for doing research will include gathering historical knowledge to develop a deeper understanding of the Asian regions I plan on examining, along with how they shifted in response to Cold War pressures. I am also researching, although to a lesser extent, some of the psychological effects of trauma caused by the Cold War's presence and how that uniquely impacts Asian American literature.I am also reviewing literature that either includes Cold War narratives or themes that are shared with stories transformed by the Cold War's influence.Some of my key results at the moment are the identification of key themes in Asian American literature; these themes are generational difference, generational trauma, and family. I acknowledge thatthese themes are hardly unique to countries destabilized by the presence and military or covert operationsof the United States. However,Asian families especially must contend with the difficulty of foreign interference and how it constrains Confucian values. As a result of foreign interference, there are powerful feelings of insecurity and fear throughout many Asian American stories; Asian parents who struggled immensely due to the Cold War raging throughout their country taught their children to survive, rather than thrive.

Dobner, Megan

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Psychology/Neuroscience

Author/Contributors:
Harrison Thiry *Farhiya Muhidin* *Cleo Opoku-Owusu*
DeNae Bube *Megan Dobner* *Brooke Bayerl*
Riley Kangas

Abstract Name: **Inversion of In-Group Favoritism in Adversarial Conditions**

Introduction: In-group favoritism (Sumner, 1906; Taijfel & Turner, 1986) is the phenomenon of giving preferential treatment towards individuals within the same perceived social group (e.g., age, race, gender).
Purpose: To experimentally assess whether in-group effects will negate and even invert when one party exhibits actions / demands that exceed the boundaries of a normal in-group association.
Procedure: See Appendix. We created a workplace scenario where the participant assumes the role of a co-worker. In the first segment, the participant is assigned to work with Mary, who requests some minor favors (baseline condition), and responds to the five assessment items shown in the Appendix. In the second segment, Brittany joins the workgroup, and does things that should go beyond in-group boundaries (inversion condition), and then the participant responds to the same five items.
Hypotheses: (1) sum of the five ratings will be significantly lower in the inversion (I) condition relative to the baseline (B); (2) participants who are around the same age as the scenario models will show a stronger inversion difference relative to those who are not; (3) because of its nurturing facets, the Big Five trait agreeableness will moderate the effect such that more agreeable participants will be less affected by the inversion effect.
Participants: 63 total from convenience and classroom samples, age ranging from 16 to 62.Results:Hypothesis 1: Baseline (mean=17.4, sd=3.0), Inversion (mean=10.8, sd=3.3), t=14.82 (p<.00001)Hypothesis 2: Same age (B-I mean=3.94, sd=3.6), different age (5.1 / 2.9), t=2.09Hypothesis 3: Correlation Agreeableness vs B-I difference r = -.24 (p<.05)Discussion: H1 was supported, H2 was significant but in the wrong direction (non-matching aged participants showed a larger inversion effect), H3 was supported (more agreeable, smaller B-I difference). Follow-up research suggested for H2.

Doersch, Melissa

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Melissa Doersch

Abstract Name: Balance and Postural Control of Hearing Impaired vs Non-Hearing Impaired Pre-Pubescent Children

This study will investigate balance and postural control in children with sensorineural hearing loss versus non-hearing impaired children. Sensorineural hearing loss occurs when the inner ear becomes damaged, resulting in vestibular dysfunction in up to 70% of hearing loss cases. Vestibular dysfunction has been associated with reduced balance and postural control performance. No prior studies have investigated balance and postural control performance in elementary school aged pre-pubescent children without hearing loss versus those with vestibular dysfunction associated sensorineural hearing loss. We will recruit approximately 40 prepubescent children, divided evenly into non-hearing impaired and those that have vestibular dysfunction associated sensorineural hearing loss. Each will be assessed for dynamic balance with the Y-balance test. Static balance performance will be assessed with the Modified Clinical Test of Sensory Interaction in Balance (MCTSIB), which consists of four tests with eyes open and closed on firm and unstable surfaces. A portable force plate recording vertical ground reaction force variability while standing on one foot on a firm and unstable surface will be used to assess postural control. The standard deviation of these forces will be normalized to body mass for analysis. A multivariate analysis of variance will be utilized to determine differences between groups for the dependent variables. The level of significance will be set at 0.05. The planning of this study is already underway, with data collection to occur in January 2023, and data and statistical analysis in February 2023. We hypothesize that pre-pubescent children with vestibular associated sensorineural hearing loss will have reduced balance and postural control than non-hearing-impaired children.

Doetkott, Erika

Institution: *MN - University of Minnesota - Duluth*

Discipline: Social Work

Author/Contributors:
Erika Doetkott

Abstract Name: A Case Study: Exploring the Impacts of Social Enterprise on Trauma-Impacted Women

Adverse Childhood Experiences (ACEs) identify how exposure to negative events in childhood may affect a person's development and can indicate how high-risk a person is for different health issues (Felitti et al., 1998). To mitigate these outcomes, studies have been conducted examining how community engagement can affect ACEs and have shown that social enterprises can lead to stronger and safer communities. Providing social supports in marginalized communities benefits trauma-impacted people living in those areas (Ebrahim, 2019; Macaulay et al., 2018). Various interventions have been noted to reduce and mitigate negative outcomes from ACEs and other traumatic experiences.Mothers in marginalized communities may experience a harder time buffering their children from these adverse experiences and would benefit from interventions such as social enterprise, community services, and therapy aimed at addressing impacts from their childhood ACEs and mitigating ACEs for their children. This project examined the impact that a local social enterprise, the First Ladies of the Hillside, provides to women who have experienced trauma. Participants were recruited from supportive housing units and had previously experienced homelessness.Participants completed a demographic/ACEs survey and interacted in a focus group surrounding their beliefs on how partaking in a social enterprise has impacted them. The women expressed feelings of support, empowerment, personal growth, and community. They also discussed the benefits their children were able to experience due to social enterprise, such as opportunities to interact with university students, explore new activities, and expand their world view.Results are displayed in a graphic recording, a real-time translation of conversations into text and pictures and indicate that the First Ladies of the Hillside offer support, community, and empowerment for those who partake. Their social enterprise and community engagement positively affect trauma-impacted and marginalized women living in their community.

Dohms, Amanda

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Amanda Dohms,
Katie Steffes

Abstract Name: Perceptions of supporting and cultivating partnerships with families of children with differing abilities.

The purpose of this research is to examine strategies and supports used tocultivate partnerships with families who have children with differing abilities. We know that thereare many benefits to partnering and working collaboratively with families, but how do early childhood educators support and share resources? Along with a review of literature, surveys will be used to seek early childhood educator perspecives regarding supports and resources for children with differing abilities. Participants will bre provided a survey with questions pertaining to their experiences with children with differing abilities and their families. They will also be asked about their ability to find, access and share community resources.

Dombrowsky, Michael

Institution: ***NM - University of New Mexico - Valencia Campus***

Discipline: Physics/Astronomy

Author/Contributors:
Michael Dombrowsky,
Aaron Torres,
Clifton Murray,
Victor French

Abstract Name: Electrode Sharpness, Spark Gap, and Spark Prevention

Ben Franklin's experiments with lightning in the 1700's showed that sharp-tipped metal rods reduce the chances of a strike near the rod itself. This has been confirmed as recently as the early 2000's e.g. by C.B. Moore et al, 2000, 2002, in research with actual thunderclouds. Similarly, sharp-tipped "needle" electrodes are commonly observed to prevent fully-developed sparks from laboratory electrostatic charge generators. In this case, (1) just how sharp must the electrodes be for spark prevention? And (2) by what process does a sharp electrode prevent emphatic sparks? We seek to answer these questions experimentally, by (1) using a Van de Graaf charge generator with spherical-tipped "receiving" electrodes of varying sizes, and (2) by investigating the phenomenon of "corona" as the discharging mechanism: What is corona? How does it differ from an emphatic spark? We compare our small-scale findings to the present view of how lightning rods reduce the chances of nearby strikes.

Donaldson, Ciara

Institution: *NJ - Bloomfield College*

Discipline: English/Linguistics

Author/Contributors:
Ciara Donaldson,
Roswell Cabrera

Abstract Name: **Challenging the Tyranny of Love: Video Game Design and Critical Metaphor Studies**

Language is a means of connecting and communicating effectively. Language allows us to identify with others, and make sense of the world around us. But how do we accurately describe something? Friedrich Nietzsche writes of the will to truth in language, that it is, “A movable host of metaphors, metonymies, and; anthropomorphisms: in short, a sum of human relations which have been poetically and rhetorically intensified, transferred, and embellished, and which, after long usage, seem to a people to be fixed, canonical, and binding” (4). In other words, we conceptualize much of our existence through rhetorical language, but most importantly, for the purpose of our presentation, in metaphors.Oftentimes, metaphors serve as a dominant understanding of something, especially metaphors of love. And some of these can be quite troubling, setting up love as something to be endured, tackled or overcome: Love is often metaphorized as a journey, a battlefield, a roller coaster, even a drug. As students of game design, our presentation will focus on our design of a “serious game” that both entertains an audience, and teaches them about how metaphorical language has the power to shape prevailing conceptions of love, which, as philosopher Alain de Botton suggests, have dominated Western sensibilities since the Romantic Era. In this particular game, players make choices about a metaphor of love that they associate with the most at the outset, but they might also adopt alternative metaphors of love depending on the decisions they make during the game. The game’s purpose is to entertain and educate the player on the power of language to shape meanings about a universal human phenomenon and its meaning in contexts.

Dong, William

Institution: *IA - University of Iowa*

Discipline: Engineering/Applied Sciences

Author/Contributors:
William Dong *Vincent Magnotta* *John Piaszynski*
Marla Kleingartner *Sneha Phadke* *Kanchna Ramchandran*

Abstract Name: **Artifact Test of a Nitinol Breast Biopsy Clip in an Ultra-High Resolution Magnetic Resonance Imaging (MRI) Environment**

Introduction: Most breast biopsy clips have not been artifact tested in 7T MRI environments. Artifacts, such as image distortion or signal loss, are caused by the metallic properties of these objects, which negatively affects the resulting image quality. This project evaluates the extent of the artifact in 7T MRI for Ultracor Twirl, an untested nitinol clip.Methods:Image acquisition: Implant images were taken with combinations of imaging settings, including orientations relative to the magnetic field, spin or gradient echo, and readout or phase encode directions. A reference (without object) image was acquired for each image setting to compare the voxel (3D pixel) intensity difference between the metallic object present and absent. The artifact test measures the size of significant intensity differences.Image processing: Deformable and rigid image registration via Advanced Normalization Tools Software (ANTs) corrected motion errors by aligning the artifact and reference image. The background image intensities were matched via histogram matching.Results:All implant images taken contain an artifact. The largest artifact volume of the nitinol biopsy clip is 4049.25mm^3 when applying deformable registration without histogram matching. The imaging settings to obtain the volume were axial view, gradient echo sequence, frequency encoding in the A-P direction, and perpendicular orientation. The reference image imaging settings were axial view, gradient echo sequence, frequency encoding in the A-P direction, and perpendicular orientation.Discussion/Conclusion:The current results indicate that the nitinol biopsy causes a noticeable artifact in a 7T MRI environment. The use of this clip in the region being scanned is likely to negatively affect the imaging quality in terms of signal loss and distortion. The limitation of the current result is that using deformable registration setting slightly misrepresented the artifact by deformation. Better methods of representing the artifact are currently being explored.

Donkoh, Saralyn

Institution: *GHA - Ashesi University*

Discipline: **Business**

Author/Contributors:
Saralyn Donkoh

Abstract Name: **The Hedging Prescription: FX risk in Ghana?s Pharma**

This paper aims to diagnose and address the specific currency exposure risk facing Ghana's pharmaceutical industry in the wake of Ghana's depreciating currency and this industry's high import dependency. Going further, this research seeks to explore the role hedging and other currency risk management strategies can play in addressing the identified problem and informing the decisions of pharma firm managers and policymakers. A mixed-methodology model would be used by extracting information from both semi-structured interviews and survey data collected from a sample of twenty-nine non-listed importing firms. Subsequently, the currency exposure measure propounded by Bodnar et al, and a hedging decision analysis would be used for data analysis; and the relationships between variables of interest would be statistically tested and established. The study's findings have the potential to provide policy and financial managers a realistic framework for managing currency exposure which would drastically cut losses faced in Ghana's pharma industry and allow for re-investment towards increasing the affordability and accessibility of medicines in Ghana.

Donohue, Erin

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Emma Smith *Erin Donohue* *Molly Carley*

Abstract Name: **Coping with a Partner's Death due to COVID-19: The Impact of Coping Styles on Posttraumatic Growth and Complicated Grief**

A loved one's unexpected death from COVID-19 relates to higher levels of prolonged grief (Eisma et al., 2021). Prior to COVID-19, unexpected loss research suggests that avoidant coping (e.g., denial) significantly predicts complicated grief (Schnider et al., 2007), while problem-focused (e.g., positive reframing) and emotion-focused (e.g., support) coping predict posttraumatic growth (Fisher et al., 2020). Our study examined what coping styles predict complicated grief and posttraumatic growth for individuals whose partner unexpectedly died from COVID-19. Participants (N=37; 36 females; Mage=52.57 years) completed an online survey (MTimeSincePartnerDeath=9.74 months). Measures included Inventory of Complicated Grief (Prigerson et al.,1995; α=0.89), Post-Traumatic Growth Inventory (Tedeschi & Calhoun, 1996; α=0.95), and Brief-COPE (Carver, 1997; α=0.74), comprised of problem-focused, emotion-focused, and avoidant coping facets. Table 2 presents target variable correlations.
Analyses included simple and multiple linear regressions controlling for age, education level, and time since death. Specific to avoidant coping, denial (β=7.71, p=.001) significantly predicted complicated grief (R2=0.40, F(1,31)=24.29, p=.001). Specific to emotion-focused coping, acceptance (β=-5.24, p=.008) and self-blame (β=5.23, p=.009) significantly predicted complicated grief (R2=0.39, F(2,30)=12.01, p=.001). Specific to problem-focused coping, active coping (β=12.41, p=.001) and positive reframing (β=10.29, p=0.006) significantly predicted posttraumatic growth (R2=0.58, F(2,30)=20.72, p=.001). Specific to emotion-focused coping, acceptance (β=13.02, p=.001) and religion (β=8.60, p=.005) significantly predicted posttraumatic growth (R2=0.60, F(2,30)=21.89, p=.001). Findings support previous research suggesting problem-focused coping and religion lead to grief management and posttraumatic growth (Fisher et al., 2020; Zara, 2020) and avoidant coping predicts complicated grief (Schnider et al., 2007). Future research should further examine emotion-focused coping facets, as they predicted both outcome variables in this sample.

Dorough, Carson

Institution: ***CA - Cuesta College***

Discipline: **Business**

Author/Contributors:
Tate Pflum,
Adolfo Chairez Maldonado,
Carson Dorough

Abstract Name: **Business Model for a Food and Beverage Truck on Campus**

This presentation articulates about the different aspects of designing and launching a business model for a beverage and food truck at a college campus. It covers the specifics of the bureaucracy, regulations, and legal implications; the cost and benefit analysis, including start-up and operating costs; and the marketing study, considering students' interests and habits, and cafeteria operation hours. The business model provides an extended menu along with additional hours of operation past what the cafeteria offers. The business works alongside the campus cafeteria, not competing with it though. The business model also provides experience and skills for the members of our community. It plans on partnering with local non-profit organizations to get the labor needed to operate the food and beverage cart on the day-to-day basis, creating in this way job or internship opportunities for students and people who otherwise would have a harder time obtaining a first managerial, cooking, marketing, or in general, professional experience.In addition to describing how to operate a food and beverage truck, the presentation will also show how beneficial it will be in the long run for the students at a community college and the local community at large. We have funds to actually launch the project and we expect our presentation to be detailed enough as to help other campuses actually launch their own beverage and food truck staying within an initial budget of $20,000. The operational costs and the numbers needed to make it sustainable and profitable in the long run are also included.

Dorough, Carson

Institution: ***CA - Cuesta College***

Discipline: **Mathematics**

Author/Contributors:
Carson Dorough

Abstract Name: **Insights Learned by Solving Mathematical Questions**

I have solved two open problems in mathematics. One was published inthe College Mathematics Journal bythe Mathematical Association of America;the other in the New York State Mathematics Teachers'Journal bythe Association of Mathematics Teachers of New York State. In my presentation, I will talk about the specifics of each problem, methods I found to be successful, and methods I found whichdid not lead to a solution. These lessons I learned are useful to anyone who is interested in problem solving and mathematical puzzles.The problem by the MAAstates: "Let a,b, and c be positive real numbers. Prove that the natural log of(27abc/(a+b+c)^3 is less thanor equal to ((a-b)^2+(b-c)^2+(c-a)^2)/3".While this question initially seems algebraic, it can very easily be modeled with geometry and mathematical analysisto produce an elegant solution. This shows the value of using creative interdisciplinary thinking. The problem by the AMTNYS was very geometric in itself. It gave an arbitrary circumference and point within a certain distance from each other, and required to obtain, using compass and edge,two points in the circumference meeting certain conditions.Certain techniques such as algebra and trigonometry doprovide solutions, but the most elegant was, indeed, with compass and edge, reasoning bysymmetry and similarity between triangles. This shows the value of having an in-depth understanding of a question, and understanding whatyou can draw from the axioms of a question in order to find a very simple and robust solution.By presenting the insights I learned while attempting these questions, I hope to teachmy peers the same methodsso that they may be more capable of finding elegant solutions to puzzling questions.

Doss, Isabella

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Isabella Doss,
Matthew Jewell

Abstract Name: Etching and Characterization of REBCO Tape to Assess Damage from Tape Synthesis and Mechanical Slitting

Rare-earth doped barium copper oxide (REBCO) superconductors are promising materials for high-field magnet applications due to their extremely high upper critical field values. The REBCO tape is comprised of several different layers to create epitaxy for the superconductor itself, but defects in the tape are possible due to mechanical slitting of the tape. In this study, we sought to understand where these defects are located within the tape and correlate them with underlying structures. Chemical etchants were developed to remove the exterior stabilization copper and the silver capping layer, and varying concentrations of nitric acid ranging from 0.5%-2% were used to enhance the cracks in the REBCO layer and subsequently etch the REBCO and LaMnO3(LMO) layers of the composite tape, allowing direct imaging of key layers of the tape. Through imaging and analysis of the cracks in each layer, we have determined that the REBCO layer has the most cracks followed by LMO and then Al2O3. We found that the number of cracks in each layer was 78, 58, and 20 respectively for a 0.2 mm section of tape. The left edge of the tape typically has longer crack lengths in all layers and the edge cracks are longer than the vertical cracks. On average, the alumina layer has the longest cracks at 54.1 um followed by LMO at 46.3 um and REBCO at 12.8 um. These results demonstrate that the REBCO layer is the most susceptible to crack initiation (with the highest number of cracks), but that the underlying LMO and alumnia layers are more susceptible to crack propagation (with longer cracks). Our work will lead to a better understanding of defect formation in this important tape superconductor and improve the reliability of the fabrication of REBCO tapes.

Dove, Makayla

Institution: ***IA - Iowa State University***

Discipline: Biology

Author/Contributors:
Mckenzie Sanden,
Mackenzie Thackery,
Makayla Dove,
Qian Wang

Abstract Name: Genetic Contributions of APOE & TOMM40 to Mitochondrial Morphology & Alzheimer's Disease

The strongest genetic risk factor of late on-set Alzheimer's disease, LOAD, is the apolipoprotein allele APOE ε4. APOE is an apolipoprotein that transports cholesterol and amyloid-beta proteins between cells and across the blood-brain barrier. Previous research suggested APOE ε4's relation to LOAD is tied to inefficient cholesterol; lipid transportation. Thus causing amyloid-beta protein accumulation and plaque formation in the brain. New research suggests that APOE ε4 affects other cellular functions, such as cellular glucose metabolism. TOMM40 rs2075650, a translocase of the outer mitochondrial membrane, is another single nucleotide polymorphism tied to Alzheimer's disease. Interestingly, genes APOE and TOMM40 are in proximity on chromosome 19 and share linkage disequilibrium. In order to study their effects on cellular level, HEK293 cell lines carrying combinations of these alleles will be created using Piggy-bac homology-directed repair method facilitated by CRISPR Cas9 technique. The Piggy-bac plasmid vector contains GFP, Puromycin resistance and hsvTK genes for cell selection. Once the cells are verified through sequencing, we will evaluate the effect of APOE ε4 on the distribution and transportation of cholesterol inside and outside HEK293 cells, glucose metabolism through mitochondria, and also to study its interaction with TOMM40 rs2075650.

Dow, Natalie

Institution: *AZ - Embry-Riddle Aeronautical University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Amanda Zhu,
Natalie Dow

Abstract Name: **Understanding an Engineer's Brain: Developing Problem Solving and Intuition**

Ever wonder how intuition affects individual problem-solving skills? Does getting an A in a class correlate to an increase in intuition in that subject? As technology-aided problem-solving increases, it is critical for engineering students to develop the necessary skills to predict and analyze solution outcomes, which we call engineering intuition. Intuition has been previously studied in nursing, business management, and law, and is a key component in the development of expertise. To increase how intuition is taught in classrooms, we need to first understand how intuition is used in problem-solving and then develop a method to measure it. With the goal of measuring intuition, we analyzed results from a survey with two statics inventory concept questions based on the Concept Assessment Tool for Statics (CATS) (Steif; Dantzler, 2005). The first question focused on assessing a problem outcome as a sensibility check and the second question focused on predicting the outcome. In addition to solving the concept questions, participants were asked questions based on their confidence in the answer, how they answered the question, the likelihood of taking additional steps to justify their answer, and the likelihood of going to a manager with just the answer. We analyzed open-ended responses from 271 participants and identified emergent themes across the responses. We used these themes to create a codebook that was applied to all open-ended responses. The resultant coding showed the correlation between the open-ended questions and qualitative analysis of the multiple-choice questions, confirming that the questions were answered in similar ways. Efforts are ongoing to determine how well the survey measured intuition, but we believe this survey is the first step to encourage intuition use in the classroom.

Dowell, Keith

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Keith Dowell,
Peter Zacher,
Deidra Gerlach

Abstract Name: **Synthesis of flexible tridentate pincer ligands featuring a rigid backbone and pendant carbene**

Catalysts are involved in the production of fuels and feedstock chemicals and are even found in living organisms as enzymes. An important classification of catalysts are organometallic complexes whose identity and reactivity are correlated to the coordination sphere defined by its ligand(s). Tridentate pincer ligands, which coordinate to a metal center via three different atoms within a plane, have been of interest for redox active and polymerization catalysis among other catalyzed reactions. Our interest is to explore the incorporation of flexibility to an asymmetric pincer ligand to identify which geometric or electronic properties influence catalytic behavior. Variation in ligand flexibility may afford unique properties that tune the action of the metal center. We are developing a ligand to feature two unique imine-N and pendant N-heterocyclic carbene-C to complex with a metal. The ligand is labeled as an NNC-type ligand by the three elements that coordinate to the metal; nitrogen, nitrogen, and carbon. Our NNC ligand features a bisimine rigid backbone and a pendant N-heterocyclic carbene which can flex to accommodate a range of coordination motifs of pentacoordinate complexes. Presented is the multi-step synthesis using air-sensitive techniques and the precursor structures that have been identified. Molecules obtained throughout the process are analyzed using 1H-NMR, FT-IR, single crystal XRD and computational analysis for prediction of optimal geometry of the target organometallic complexes. Future work will detail the properties of precursors and the synthetic approaches to metallate the NNC tridentate pincer ligand with first-row transition metals.

Doyle, Kailyn

Institution: *WI - Carthage College*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Kailyn Doyle

Abstract Name: **The Woman's Building at the 1893 Chicago World's Columbian Exposition**

The Woman's building and its contribution to art, literature, and architecture were pivotal not only for women but each category respectively. In its curation, the Woman's Building spearheaded the concept of the female gaze, in resisting and reforming the male gaze. The space reflected the ways that artists constructed femininity, reflecting the volatility of gender relations in Gilded-era Chicago. In feminizing the mainly male-determined narratives and iconography within the Fairgrounds, the building placed women at the center of a singularly determined space. The building also offers an understanding of how visual images and rhetoric contributed to the women's emancipation movement towards the end of the 19th century.The building acted as a space designed by women, for women, an oddity in cultural terms.In this Essay, I will be discussing how the Exposition ultimately reflected three interrelated narratives: evolutionary progression, the emancipatory freedoms of modern democracies, and the triumph of modernity. I will be relating how these themes that were exhibited throughout the fair were taken feminized by the women in charge of the Woman's Building. This narrative expands to a more intersectional narrative of race, culture, and gender.In general, this narrative also reflects a theme of historical progressionthat was threaded throughout the Fairground. The triumph of modernity places American innovation at the forefront, as the exposition used concepts and iconography of colonial America to place emphasis on the triumph of the modern era. Overall, it was a look into how far America had come as a society, and a celebration of modernity equally. The Exposition offered a forum for collective discussion on the political and social climate of the nation, and of Chicago. It allowed for global art, ideas, thoughts, iconography, and literature to be shared in one particular forum.

Dozier, Jalen

Institution: *GA - Morehouse College*

Discipline: Biology

Author/Contributors:
Jalen Dozier

Abstract Name: **Environmental Equity and Social Justice: The Interdependence of Redlining and Present-Day Water Quality in Atlanta, GA**

Redlining is a term that was created in the 1930's for security maps that were created by the Home Owners Loan Corporation (HOLC). The HOLC would rate neighborhoods by environmental and racial criteria with the use of colors to rank neighborhoods. The green neighborhoods were ranked as the "best" neighborhoods, blue neighborhoods would be ranked below this and as "still desirable", followed by yellow neighborhoods ranked as "declining", and red neighborhoods ranked the lowest as "hazardous". People that predominantly lived in green neighborhoods were White, whereas people in the red neighborhoods were predominantly Black. Due to these neighborhoods being labeled as hazardous, people in these communities would not be offered loans and the neighborhoods would not receive improvements to their infrastructure. I wanted to find out whether this redlining and lack of improvement would affect present day water quality? Due to infrastructure influencing water quality, I hypothesized that historically redlined communities would be disproportionately affected by poor water quality. The objective of this project was to integrate information about watersheds and water quality with human demographics to apply an environmental justice lens. All detected concentrations of E. coli and enterococci were below the EPA recommended threshold for fresh recreational waters (a GM of 33 enterococci cfu per 100 ml and a GM of 126 E. coli cfu per 100 ml). Ongoing efforts seek to better understand and explore the environmental gentrification hypothesis that predicts that environmental quality improvements in poor communities may spur gentrification and the displacement of residents.

Dresen, Julie

Institution: *WI - Madison Area Technical College*

Discipline: FAN Abstract

Author/Contributors:
Catherine Chan *Jessica Schuld* *Scott Cooper*
Julie Dresen *Cheri Barta*

Abstract Name: **The Wisconsin Council on Undergraduate Research: Working Together to Promote and Support Undergraduate Research, Scholarly and Creative Activities**

Undergraduate research, scholarly, and creative activities (URSCA) have a long history in the University of Wisconsin System (UWS). Since 1999, various system campuses have hosted the UW System Symposium, an annual gathering modeled after the National Conference on Undergraduate Research. It brings together undergraduate researchers, their mentors, and program coordinators to showcase the accomplishments of and celebrate URSCA. With the support of a National Science Foundation grant awarded to the Council on Undergraduate Research to institutionalize undergraduate research at the system/consortium level, the Wisconsin Council on Undergraduate Research (WisCUR) was formally launched in 2013.The group initially consisted of URSCA program leaders and advocates from UWS institutions. Recently, its membership expanded to include private universities and technical colleges in Wisconsin. Its mission is to provide leadership to advance, enhance, and expand URSCA across the UWS and beyond in order to prepare graduates who can adapt and innovate for the challenges of the future. Since the inception of WisCUR, URSCA programs within the WisCUR network have made great strides. For example, three UWS schools (UW-Eau Claire, UW-La Crosse, and UW-Milwaukee) have won the Campus-Wide Award for Undergraduate Research Accomplishments (AURA). No other state system has received the honor of receiving multiple AURA awards. Partly due to its involvement with WisCUR, Concordia University developed an undergraduate research certificate program and Madison College created an undergraduate research program.Wisconsin higher education institutions have also faced a variety of challenges that require innovations and adaptations, and WisCUR has served as a resource and support in this area. In this presentation, we will share the organization and goals of WisCUR, typical activities (beyond UWS Symposium) we sponsor, and benefits of WisCUR to individual institutions and staff therein. We will provide suggestions on how to organize similar URSCA groups and invite attendees to share their experiences.

Drobshoff, Aleksya

Institution: *CA - California State University - Channel Islands*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Aleksya Drobshoff *Delyar Khosroabadi* *Ahmed Awad*
Justine Garcia *Steve Carrillo*

Abstract Name: **In Silico studies and Synthesis of Modified Nucleoside Analogues for Pancreatic Cancer Therapeutics.**

Pancreatic ductal adenocarcinoma (PDAC), the most prevalent type of pancreatic cancer with a high mortality rate due to a lack of early detection techniques, leading to diagnosis at a terminal stage and limiting treatment options. The nucleoside analogue Gemcitabine, while the most effective chemotherapeutic, faces drug resistance that hinders its therapeutic potential. We propose nucleoside analogues that feature a polyethylene glycol amino (PEGA) modification. This modification reduces the hydrophilic nature of the drug. The PEGA group is also hypothesized to serve as a chelating agent for both zinc and iron ions required for RNR activity. We have done computational studies including molecular docking using the internal coordinate mechanics algorithm (ICM), SWISS Absorption, Distribution, Metabolism and Excretion (SWISSADME), and prediction of activity spectra for substance (PASS), utilizing way2drug online application. We have also begun synthesizing the intended compound and plan on performing biological and enzymatic assays afterward.The edock scores, the root mean square deviation (RMSD), and the H-bonding formation were analyzed on ICM. Edock scores showed a higher binding affinity than gemcitabine, with an average value of -48.52 KJ/mol and an average RMSD value of 2.69. The PEGA moiety indicated a strong binding affinity to a known substrate binding residues in the catalytic sites such as amino acid Asn211, a vital component to the catalytic processes. The pharmacokinetics and toxicity were assessed through SWISSADME which demonstrated excellent solubility scores of logS -0.37 and showed non-toxic interactions to CYP isoenzymes. Through PASS prediction, the biological activity of the compound showed high potential as an RNR inhibitor with a probability of activity (Pa) to probability of inactivity (Pi) of 0.174 to 0.011. In conclusion, the proposed analogues demonstrated improved target inhibitions making them strong candidates for further investigation via in vivo and in vitro studies.

Duben, Ty

Institution: *SC - The Citadel*

Discipline: Physics/Astronomy

Author/Contributors:
Ty Duben,
Maddy Cardenas,
Kaelyn Leake

Abstract Name: **Vibrational and Coupled Frequency Response of Tensegrity Tables**

Tensegrity structures have many constructional applications to improve the stability of a design. The structure, design, and function of tensegrity systems can be better understood by researching factors that determine their stability. Stability of tensegrity structures was researched by testing vibratory resistance on a shake table and dampening factors by displacing the top of the system and calculating natural frequencies and dampening rate when exposed to various external forces. When experimenting on a shake table with a rectangular structure, it was concluded that the difference in magnitude of acceleration between the bottom and top of the structure decreased by 0.68 as the bottom was exposed to a frequency of 7.2. Compared to a difference of 4.12 at a frequency of 14.9. Showing an increasing difference in acceleration as vibration frequency increases. Tensegrity structures were also found to have multiple nonsymmetric natural frequencies. Due to the two axes of symmetry, the rectangular tensegrity structure was found to have two natural frequencies. These frequencies were found to be within 1.68 Hertz of each other and are affected by the amount of displacement. From these experiments, it can be concluded that tensegrity structures provide stability because they naturally dampen vibration between the bottom and top of the structure. By understanding the stability of tensegrity systems, their applications to architecture and construction development can be better explored and utilized.

DuBerry, Nicholas

Institution: *MO - Missouri State University*

Discipline: English/Linguistics

Author/Contributors:
Nicholas DuBerry

Abstract Name: **Promoting Adult Literacy Programs in Southwest Missouri**

Literacy has become recognized as an important skill in the last century; however, programs targeting adult literacy have fallen behind in favor of programs targeting childhood literacy. Using data provided by the National Center of Education Statistics and the United States Census, this paper looks to pinpoint the communities most at risk of low level literacy in the United States along with the root issues that create disparity in literacy rates between different socioeconomic and ethnic groups. Further works in the field by Murnane et al. and Philliber et al. are used to discuss the benefits of literacy programs for the adult population, including increased economic outcomes and quality of life, in addition to arguing for the need for said programs. This paper focuses on the region of Southwest Missouri and makes comparisons between Greene county and other counties in the state. This paper gives a background on the literacy programs available in Southwest Missouri, as well as the areas where programs are lacking. This paper recommends strategies to improve access to literacy programs in the Greene county area while also calling for more research to be done on the specific demographics present in the area to help further develop more impactful programs for thecommunity.

DuBois, Elizabeth

Institution: *NY - SUNY Cortland*

Discipline: **Biology**

Author/Contributors:
Elizabeth DuBois

Abstract Name: **Quantifying Transcription-Translation Coupling Escherichia coli**

Transcription-translation coupling is a phenomenon in bacteria in which an mRNA strand is translated as it is being transcribed. It is still largely unknown how the ribosome and RNA polymerase interact in this process. This work was done to develop a construct to insert two cassettes into the LacZ gene in the E.coli genome in order to better understand transcription-translation coupling. Each cassette contains ends homologous to the LacZ insertion site, either a hairpin or no hairpin sequence, nLuc, and thyA. Because one of the types of transcription termination is hairpin formation, this was used to infer how closely coupled the ribosome can be to the RNA polymerase. PCR was used to generate DNA fragments containing the cassette, which were transformed into E.Coli cells with a thyA deletion. Luciferase production was measured, which indicated how closely the ribosome and RNA polymerase were coupled. It was found that the hairpin had less of an effect in the open reading frame of LacZ, while at the end the hairpin had a greater effect. The ribosome was closest to the RNA polymerase at an insertion site closest to the end of LacZ and farthest away at the beginning. This suggests that at certain points in a gene, the ribosome and RNA polymerase could be at a certain distance apart. This can be further investigated by inserting into more sites within LacZ.To continue this work, efp genes were deleted on either side of proline codons to test the reliability of the assay. This portion of the research is still ongoing.

DuBois, Sophie

Institution: *AZ - Embry-Riddle Aeronautical University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Sophie DuBois,
Jorge Diaz Albelo,
Tahmina Tisha

Abstract Name: **Exploring Underrepresented Aviation Students' Mental Health and Success in Higher Education: A Phenomenological Study**

In recent years, college students' mental health has significantly declined, especially within minority student populations. Within the aviation industry, unattended mental health concerns in pilots have led to various fatal accidents. With devastating mental health-related incidents in the aviation industry, educational institutions must take the necessary steps to set their students up for long-term success in every aspect of life. Furthermore, due to the ongoing pilot shortage crisis across the United States, the aviation and aerospace industry has launched diversity, equity, and inclusion (DEI) campaigns designed to attract future employees from underrepresented groups. This project aimed to study the student experience regarding mental health in underrepresented minorities in aviation and aerospace degree programs. To do so, the researchers deemed it crucial to understand the aviation and aerospace students' psychological symptoms through the use of a feasible and reliable instrument such as the Counseling Center Assessment of Psychological Symptoms (CCAPS-34). The resulting data was used to provide the initial step in determining the acceptability, feasibility, and potential of the CCAPS-34 as a measure of distress in help-seeking aviation and aerospace students. Additionally, qualitative focus groups were conducted across two aviation-focused higher education campuses to understand the needs and wants for mental health. Our results showed an ongoing need for widespread, comprehensive reform through social support, promotion of psychological well-being, and activities with minimal psychological distress.

Dubovi, Josiah

Institution: *PA - PennWest Clarion*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Josiah Dubovi,
Chunfei Li

Abstract Name: **Investigation of Facet Orientation of Al-Cu-Fe Alloy with Scanning Electron Microscopy**

Crystalline facets are surfaces on single crystals that are smooth down to the atomic level, and they provide information on the internal crystalline structure of a material. While methods for quantitative facet analysis exist, these typically necessitate the use of specialized or expensive equipment. To make this type of research more accessible, a procedure to determine the orientation of crystalline facets using Scanning Electron Microscopy (SEM) and Electron Backscatter Diffraction (EBSD) is proposed and tested. In contrast to the equipment used in other methods, this procedure makes use of relatively common, versatile, and inexpensive equipment. The present research focuses on the use of SEM in this method.The material used for this analysis is an alloy of composition Al60Cu25Fe15 prepared by arc melting. It exhibits various interesting structures that can be observed with SEM, among which are spherical particles approximately ten micrometers in diameter. Distinct concentric rings, which are believed to be facets, can be observed on their surfaces. Three unique types of these facets have been observed. Each type corresponds to a unique crystalline direction of a cubic cell, which can be predicted by observing its rotational symmetry. The orientation of these facets is determined through visual examination using SEM and the built-in stage transformation operations which allow for quantitative analysis of the angles between them.To verify the accuracy of this procedure, the measured angle is compared to the theoretical angle between the crystalline directions that correlate to each facet. The angle measured using this approach is in agreement with the theoretical prediction, and it is supported by the crystalline structure determined by EBSD analysis. The results suggest that the use of SEM visual examination for determining the orientation of facets is a viable method, but the procedure must be further refined to yield more accurate data.

Duckworth, Emily

Institution: *WV - West Virginia University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Emily Duckworth,
Vagner Benedito,
Michael Gutensohn

Abstract Name: **Deconvoluting the sesquiterpenoid biochemical pathway of Artemisia annua**

Malaria is a mosquito-borne disease that affected 229 million people worldwide in 2019, resulting in more than 400,000 deaths. The most effective antimalarial medicine is the natural product from the herb, Artemisia annua called artemisinin. Artemisinin is a sesquiterpene lactone compound, which structure is too complex to synthesize in vitro. Although bioreactor production of feasible with microorganisms, the product become too expensive for governments in many poor countries to purchase. Therefore, in planta production remains the most economically viable way to produce artemisinin. The overall goal of this research is to enhance terpenoid biosynthesis in A. annua and boost artemisinin accumulation in glandular trichomes of artemisia. We used Gas Chromatography – mass Spectrometry (GC-MS) to quantify and compare the abundance of mono- and sesquiterpenoids of 13 accessions of the A. annua germplasm collection at WVU. We have also started assessing volatile organic compound (VOC) headspace losses during artemisia cultivation in greenhouse conditions.

Duda, Felicia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Felicia Duda,
Mia Kelly

Abstract Name: **The Unbelievable Survivor Impact of Victim-Blaming**

Abstract: This project was designed to explore how victim-blaming and support are portrayed in television representations of sexual assault experiences. Sexual assault is one of the most underreported violent crimes nationwide. This underreporting has historically been attributed to a multitude of factors, including fear of experiencing revictimization during disclosure experiences to law enforcement, as well as loved ones. Secondary victimization generally refers to the trauma experienced by survivors based on the reactions of others following disclosure of their victimization. Evidence of victim-blaming (i.e., the belief that survivors are at least somewhat to blame for their victimization) has continued to be a reoccurring feature in media portrayals of sexual assault survivors. On September 13, 2019, Unbelievable, the onscreen adaptation of T. Christian Miller and Ken Armstrong's (2015) Pulitzer Prize winning article, A False Report: A True Story of Rape in America, premiered as a new eight-episode mini-series on Netflix. The purpose of this project was to explore how the nature and source of the victim-blaming impacts the survivor in this television adaptation. Using a content analysis of all episodes of Unbelievable, the following areas were considered: (a) the nature of victim-blaming, (b) the sources of victim-blaming, (c) the sources of support, and (d) type and level of impact of victim-blaming or support on survivor.

Duenkel, Victoria

Institution: *NC - Elon University*

Discipline: Sociology

Author/Contributors:
Victoria Duenkel

Abstract Name: **Why do You Sit There? A Study on Factors Influencing Seating Preferences in the Classroom**

In college, it is rare that professors assign seats, but students still have their spots. But why do students choose to sit where they do? Where a student sits when they walk into a class for the first time is based on several factors, though research exploring the factors behind seat choice is scant. Current exploration of seating preferences focus on factors including territoriality, perceptions of work ethic, and interpersonal relationships with the professor. As technology becomes more prominent in the classroom, students may prefer seats near outlets, suggesting that non-social/psychological factors may be involved in selecting seating. Various pedagogical approaches including, lectures, discussions, labs, and online classes suggest a situational reading of the social environment by the student. Employing an online survey containing both open and closed-ended questions this research looks at what factors affect seating choice and seating preferences in a mid-sized east coast college setting.A subset focus of this research is on students with accommodations and their seating preferences. As disability needs are being addressed through the American Disabilities Act of 1990, more disabled students are getting mainstreamed in higher education and accommodations are becoming standardized practices. An accommodation seen across a variety of disabilities is "preferential seating." By allowing students to position themselves in the classroom, they are being taught to adapt their environment to best support their learning. This exploratory study offers data containing a preliminary list of factors affecting where students sit in a classroom and avenues for further research.

Duffy, Hugh

Institution: *IA - Iowa State University*

Discipline: Architectural and Interior Design

Author/Contributors:
Hugh Duffy,
Sitong Wang,
Jorge Nunez

Abstract Name: **Low-Carbon Footprint Concrete for 3D Printed Buildings**

3D printing concrete has recently emerged as a revolutionary technology. Over the past two decades, developments in the technology have allowed a wide variety of applications, e.g., the fabrication of buildings. Cement manufacturing accounts for approximately 5% of anthropogenic CO2 emissions worldwide. The carbon footprint created from concrete is unsustainable for the environment. New forms of concrete containing alternative materials such as waste products and bio-aggregates are being implemented to reduce the overall carbon footprint. In our research, we are testing various mixes of concrete containing shredded wind turbine fibers, recycled glass powder, corn stover, and biochar. These materials were chosen as they provided a balance of strength, workability with the 3D concrete printer, and lower carbon emissions. To test our mixtures, we developed the following workflow: mix, cure, test, and evaluate. Each concrete mixture contained varying mix ratios of cement, sand, water, and one of the alternative materials. To ensure proper test results, we made 4 test mixtures containing 3 specimens for each material. This resulted in a total of 12 specimens for each material. Each specimen was cured for 28 days under water. After curing, we tested the compressive strength of each specimen on a hydraulic press machine and analyzed measurements of the load and stress. We then calculated the carbon footprint of the concrete mix with each alternative material. This data allowed us to analyze the mixtures and determine the most suitable candidate for 3D concrete printing. The new concrete mixes showed a varying level of compressive strength and showed a noticeable reduction in carbon footprint compared to the standard concrete mix. The technology of 3D concrete printing in combination with eco-friendly concrete will lay the foundation for a more sustainable future for housing.

Duffy, Katherine

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Katherine Duffy

Abstract Name: **Utilizing Obstetric Nursing Simulations to Strengthen Clinical Judgement in Undergraduate Nursing Students**

Background: Clinical Judgement is an integral part of nursing practice, guiding the assessments and decisions of nurses every day. Yet, research revealed that 77% of new nurses lack sufficient clinical judgement skills to translate this principle into practice after graduation. This cognitive dimension has historically lacked a concrete definition, but it can be conceptually viewed as the culmination of critical thinking, decision making, and knowledge application utilized by a nurse. From this definition, a tool used to evaluate Clinical Judgement through faculty observation, the Lasater's Clinical Judgment Rubric (LCJR), was developed to measure the level of judgement nurses and especially new graduate nurses possess. Following the American Association of Critical-Care Nurses (AACN) Essentials (2021) and The National Council of State Board of Nursing (NCSBN) Clinical Judgement model (2019), this study aims to create an obstetric simulation to enhance the level of Clinical Judgement in undergraduate nursing students in accordance with LCJR.Methods: An obstetric nursing simulation is being formulated to enhance clinical judgement in undergraduate nursing students. The simulation will be piloted in junior undergraduate nursing students currently taking the obstetric nursing course in their curriculum. Throughout the simulation, Clinical Judgement is planned to be measured utilizing a student self-assessment tool created through this study based on outlines set from the LCJR.Results: Following the simulation, a t-test will be completed utilizing the participants' completed self-assessments to analyze change in Clinical Judgement levels. Non-biased faculty surveys will be used to validate anticipated outcomes.Conclusion: Obstetric Nursing Simulations will be found to be an effective teaching method to increase Clinical Judgement levels in undergraduate nursing students, increasing the confidence and ability of new graduate nurses entering into the work force.

Dullye, Ashlye

Institution: *NC - Elon University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ashlye Dullye,
David Vandermast

Abstract Name: **Investigation of Glacial Relictual Populations in the Piedmont of North Carolina**

During the Pleistocene Epoch, glaciers covered about 5,000,000 square miles of North America and spread as far South as the latitude 37 degrees North. These glaciers allowed cold adapted flora—otherwise referred to as relictual populations—to flourish. Yet, as the glaciers retreated, these relictual populations did as well. However, small populations continue to persist in higher elevations within southeastern and western North America; this is because higher elevations provide for a colder atmosphere due to the adiabatic lapse rate concept. This study investigates the relictual population Quercus montana—commonly referred to as Chestnut Oak—to characterize the populations of Chestnut Oak, to determine which environments relictual populations grow best in, and to discover whether the relictual populations will continue to persist within a warming climate. This past year, data was collected and analyzed over 50 plots on the two mountains in the North Carolina Piedmont, Occoneechee and Cane Creek. While analyses on the older tree populations has been conducted—including the Shannon index, basal area, importance value, and aspect transformation—it was revealed that the tree populations are healthy going into a changing climate and that the warming climate has not significantly impacted the older populations yet. However, further community analyses are to be conducted on the seedlings and saplings data to determine if the newer generations are being impacted by the warming climate. Additionally, soil analysis is to be conducted on all plots to investigate what environments and with what nutrients relictual populations, particularly Chestnut Oak, grow best with.

DuMaine, Jasmine

Institution: *TN - Rhodes College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jasmine DuMaine,
Rebecca Crenshaw,
Deranda Lester

Abstract Name: **SEX EFFECTS ON MESOLIMBIC DOPAMINE RELEASE IN MICE**

The mesolimbic dopamine system is known for regulating reward, motivation, and attention. Dysfunction in mesolimbic dopamine functioning is associated with disorders such as ADHD, depression, and substance use disorder. As is historically common in neuroscience research, thedata collected in studies on the neural underpinnings of these disorders has been conducted mostly on males. Generalizing findings to females could be problematic, as some recent studiessuggest that aspects of the mesolimbic dopamine system functioning may be sex-dependent. The purpose of the current project was to investigate potential sex effects related to phasic dopaminerelease. The mesolimbic dopamine system consists of dopamine cell bodies in the ventral tegmental area that project to limbic nuclei, most notably the nucleus accumbens (NAc). In thisstudy, we used in vivo fixed potential amperometry to measure specific aspects of NAc dopamine functioning (dopamine release, the synaptic half-life of dopamine, dopamineautoreceptor sensitivity, the neuronal supply of dopamine, and the dopaminergic response to cocaine) in male and female C57BL/6J mice. No differences were observed in the synaptic half-life of dopamine (a measurement of dopamine reuptake and dopamine transporter functioning), dopamine autoreceptor functioning, or the neuronal supply of dopamine. However, female micedisplayed greater dopamine release and an increased dopaminergic response to cocaine compared to male mice. These results fit with behavioral studies in which female mice acquirecocaine self-administration at a faster rate than males. These findings have implications for not only substance use disorder but also a number of psychiatric disorders related to dopaminefunctioning and/or treated with dopaminergic drugs.

Duncan, Megan

Institution: *AR - John Brown University*

Discipline: English/Linguistics

Author/Contributors:
Megan Duncan

Abstract Name: **Android and Alchemist in the Garden of Eden: An Analysis of the ﷺPinocchio Syndromeﷺ Character Type as a Guide to Our Humanity**

This paper will examine the morality, philosophy, and humanity of a few characters in pop culture who find themselves uniquely situated outside of the common human experience yet, through the depiction of their virtuous character and their quests to attain their humanity, are positioned to act as guides for their audience's personal development. The characters I have chosen to analyze are the android Data from "Star Trek: The Next Generation," Alphonse Elric from "Fullmetal Alchemist: Brotherhood," who is a boy whose soul has been bonded to a suit of armor following the loss of his physical body in an alchemical accident, and the synthezoid Vision from Marvel Comics. These characters fit into the trope called Pinocchio syndrome, which I will be defining as the desire of nonhuman characters to attain humanity in what they see as the meaningful elements of human existence and for formerly-human characters to regain what they have lost of their humanity. Critics have judged the quest of the Other for humanity as unrealistic and opposed to self-actualization when characters of this type often in fact possess superhuman abilities. However, viewing these characters as created by humans for a human audience, I want to demonstrate the value of these characters as representatives of an ideal vision of humanity with consequent potential to present a unique perspective and example to inspire their human audience. I will be analyzing scholarly articles on the characters I have chosen in relation to their identity formation, self-actualization, and humanity as well as comparing and contrasting the origin stories of each character with the narrative of humanity's beginnings from the Biblical book of Genesis to complete this study.

Dunkley, Brooke

Institution: *NC - North Carolina State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Brooke Dunkley *Kyla Bosh* *Katherine Saul* *Jacqueline Cole*

Abstract Name: **Effects of Brachial Plexus Birth Injury on Structure and Composition of Biceps, Supraspinatus, & Subscapularis Muscles**

Brachial Plexus Birth Injury (BPBI) occurs in about 0.9 out of every 1,000 births when the nerve bundle innervating the shoulder is damaged due to excessive stretching of an infant's neck. About 30-40% of affected infants suffer lifelong shoulder impairment including paralysis, reduced range of motion, and musculoskeletal deformities. Deficits vary by injury location, affecting muscle mass and contracture, but the effect on underlying muscle composition is unknown. We hypothesize diminished muscle growth resulting from BPBI is related to increased collagen content, causing impaired muscle function. Altered passive muscle loading and active functional loading can both contribute to collagen buildup between muscle fibers, so their effects will be examined across four different surgical groups. Sprague Dawley rats (n=8 per group per timepoint) underwent surgery on one forelimb at 3-6 days post-birth: preganglionic neurectomy, postganglionic neurectomy, forelimb disarticulation, or sham. Contralateral limbs served as added controls. Biceps, subscapularis, and supraspinatus muscles were dissected at various developmental stages (2, 3, 4, 8, or 16 weeks post-injury), snap-frozen, cryosectioned longitudinally, and stained using Masson's trichrome. Muscle sections were imaged and analyzed as a ratio of collagen (stained blue) to muscle tissue (stained red). Groups were compared using ANOVAs and Tukey posthoc tests (GraphPad Prism, α=0.05). Preliminary data indicate that injured biceps and supraspinatus muscles from postganglionic neurectomies tend to be more fibrotic at 4 weeks post-injury than contralateral uninjured muscles. The opposite was true for biceps taken from the disarticulation group. Subscapularis muscles tend to be more fibrotic for postganglionic neurectomy compared to disarticulation for both injured and uninjured limbs. Analyses are ongoing to understand the progression of altered muscle architecture throughout development following BPBI. This study is the first to characterize fibrosis progression of the supraspinatus, subscapularis, and biceps muscles after BPBI, which may inform treatment planning.

Dunnum, Cora

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Cora Dunnum,
Gillian Davis,
Lydia Staebell,
Dr. Bradley Carter

Abstract Name: **Effect of embryonic cortisol exposure on neuronal cell marker gene expression in zebrafish larvae**

Exposure to prenatal stress is known to correlate with additional health outcomes later in life, including neurodevelopmental disorders. Cortisol is the stress hormone thought to mediate the effects of prenatal stress. However, how changes in cortisol impact neuron development is not well understood. We tested how early cortisol exposure affects mRNA gene expression of different neuronal cell markers in zebrafish using quantitative polymerase chain reaction (qPCR). Zebrafish embryos were treated with either a 5uM cortisol solution or vehicle solution at 3 hours post fertilization (hpf). Treatments were refreshed every day until 5 days post fertilization (dpf). RNA was then extracted from pools of larvae per treatment, converted to cDNA, and then analyzed using gene-specific primers with qPCR. These genes include markers for both neurons and glia. Differential expression wascalculated by comparing cortisol-treated samples with vehicle-treated samples using standard methods incorporating primer efficiency values. We hypothesize that there will be selective regulation of certain cell marker genes by cortisol, and we will discuss the implications of our findings in the context of understanding neuron development and cortisol signaling.

Dupree, Brittany

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Biology

Author/Contributors:
Brittany Dupree,
Jessica Lucas

Abstract Name: **Role of Cytoskeleton in Zea mays Stomatal Complexes**

Plants regulate water loss to grow as well as resist drought. Guard cells are epidermal cells that surround and form a stomatal pore. Guard cell regulation is essential for plants to resist drought. Drought impactsZea mays, a significant agricultural crop. Several studies have established the importance of cytoskeletal reorganization in guard cells as essential for guard cell function inArabidopsis thaliana, but the role of the cytoskeleton in grasses has yet to be determined. The cytoskeleton consists of microtubules and actin filaments that may play a part in the movement of guard cells in grasses. Latrunculin B (LatB) is a cytoskeletal disrupting drug that inhibits the polymerization of actin filaments. Disrupting the cytoskeleton ofZea maysguard cells to test if there is an impact on the function of the guard cells could elucidate the purpose of the cytoskeleton in grasses. Inhibiting actin proteins with LatB did not trigger stomatal pores to close during light-induced opening.LatB did not stimulate pores to remain open during dark-induced closure but trended towards significance.

Dupree, Galilea

Institution: *TX - The University of Texas at Austin*

Discipline: Nursing/Health Science

Author/Contributors:
Galilea Dupree

Abstract Name: **The Impact of Familismo on Latinx Millenial Caregivers**

Background: Familismo, or familism, refers to the cultural ideology typically shared by central Hispanic/Latinx individuals which encompasses loyalty to one's family, communalism, reciprocity, and interdependence between nuclear and extended family networks. Familismo perpetuates the collectivist expectation of caring for one's family members during times of need, such that an individual may feel obligated to take on the caregiving responsibility at the cost of unfulfilling their individual financial, emotional, and physical needs.Purpose: To explore the experiences of Latinx millennial caregivers to better understand the effect of familismo on their caregiving and their needs for the development of culturally appropriate interventions focused on stress management.Methods: This report focuses on the first phase of a three-part qualitative descriptive study of LMCs. Participants were recruited through professional contacts, national caregiving groups, and online means to participate in online focus groups held by the researcher through Zoom. During the focus groups, participants were asked open-ended questions regarding their experiences as LMCs. Following the completion of the focus groups, participants were sent a demographic survey through REDCap featuring open and close-ended questions pertaining to their demographic background and caregiving experiences. Focus groups underwent thematic analysis after being recorded and transcribed.Results: Analysis reveals four general themes- Challenges of Family Caregiving, Social Support Dynamics, Rewards of Caregiving, and Coping Strategies, with an overarching theme of the Latinx Experience. The Latinx Experience encompasses gender roles as marianismo and machismo, familismo, immigration, minority stress, and the importance of community.Discussion: The caregiving role resides at an intersection of layered identities for LMCs that is often maintained by cultural expectations associated with familismo. These findings should be taken into consideration when developing interventions for LMCs to ensure that the support they receive is both culturally appropriate and applicable to their experiences.

Duran, Erica

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Sydney Mangold,
Savannah Bynaum,
Erica Duran ,
Vianca Medina

Abstract Name: **Diversification Factors Affecting Meal Service Recruitment**

This study focuses on exploring the impact of diversity at Meals on Wheels and the factors involved in the limited number of participants of color who are part of the underserved population.There are clients that are unable to communicate with the agency because of language barriers.The type of research design is exploratory. The research explores a new topic and seeks to discover the effect that Meals on Wheels staff has on clients.Researchers created a 17-question survey that included open ended and closed ended questions to ask 100 community residents of color.

Duran, John

Institution: *CA - California State University - Channel Islands*

Discipline: Psychology/Neuroscience

Author/Contributors:
John Duran *Dylan Vega* *Kimmy Kee-Rose Ph.D.*

Abstract Name: **Behind the Scenes of Dark Triad Traits: A Study of Neurocognition and Emotional Processing**

The Dark Triad consists of personality traits of Machiavellianism, narcissism, andpsychopathy. These traits have been found to be negatively correlated with empathy.Machiavellianism and psychopathy traits have also been demonstrated to be associated withpoorer self-control, whereas narcissism and psychopathy traits have been linked to impulsivity. However, still little is known about the relationships between Dark Triad traits and other aspectsof neurocognitive processes. This ongoing study examines a broad scope of neurocognitive processes (i.e., self-control, inhibition, impulsivity) and emotional processing (i.e., emotionalawareness, and empathy) to determine specific predictors of Machiavellianism, narcissism, andpsychopathy traits in university studentsData are currently available on 53 university students. Participants' personality traitswere assessed using the Short Dark Triad questionnaire.Neurocognitive functioning wasmeasured using the Tangney Self-Control Scale, Stop-It Inhibition Test, and The BalloonAnalogue Risk Task (BART). In addition, participants' emotional awareness was assessed usingthe Toronto Alexithymia Scale, whereas empathy was measured using the Empathy Quotient.For the interim analyses, traits of Machiavellianism were regressed on the five neurocognitive predictors (self-control, inhibition, impulsivity, emotional awareness, andempathy), using a simultaneous multiple regression procedure. The regression analyses revealedthat among the predictors, response inhibition (Beta = -0.001; t = -1.975, p = .05), emotionalawareness (Beta = -0.011; t = -2.113, p = .040), and empathy (Beta = -0.026; t= -4.603, p = .0001) were significant determinants of Machiavellianism traits, whereas only empathy (Beta = -0.025; t = -2.785, p = .008) was the strongest determinant of psychopathy traits. However, none of the neurocognitive processes were significant predictors of traits of narcissism.Preliminary findings from this study could potentially expand our understandingthe specific roles of neurocognitive functioning in individuals with the Dark Triad traits.

Durkin, David

Institution: *MD - Naval Academy*

Discipline: FAN Abstract

Author/Contributors:
Abby Hemmerich *David Durkin* *Nicole Depowski*
Brian Wallace *Chimdimnma Esimai* *George Ude*
Darion A. Isom

Abstract Name: **Panel discussion: Creating a developmental curriculum to build research skills**

In this panel discussion, moderated by Abby Hemmerich, four panel members will share examples of undergraduate research embedded across the curriculum and within individual courses. These examples will highlight principles of research woven through progressive courses in chemistry, psychology, kinesiology, and natural sciences, helping students build skills developmentally from their first year to graduation.David Durkin (co-author, Darion Isom) will discuss a series of integrated labs to grow research skills throughout the middle years of the chemistry major, culminating in an independent, problem-based learning project. Details about the final "Special Project" will be presented; this project requires students to utilize all of their skills to independently design the experiment, request materials, perform of the experiment, and write the research report.Nicole Depowski will present a case study of a psychology program with research introduced at the introductory level, integrated practice across the curriculum, and a capstone senior thesis project. Early exposure to scholarship focuses on locating and reading research, while students gain skills in research ethics and design at the next level. The third year requires use of primary sources, with synthesis and analysis, culminating in a senior thesis project in which students produce their own research.Brian Wallace will discuss the process for building evidence-based practice and research principles into the kinesiology curriculum to prepare students for graduate school or health and fitness professions. Changes to student engagement in research and outcomes related to faculty-mentored research will be discussed.Chimdimnma Esimai (co-author,George Ude) will present a series of course-based research experiences that engage a whole class of students in a research question or problem. Although individual projects are restricted to a single course, students experience multiple opportunities for these projects across the curriculum, providing complementary content and developmental progression in skills.

Durocher, Brice

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Brice Durocher,
Kelly Gorres

Abstract Name: **Epstein-Barr Virus Reactivation Mediated in-vitro by Short-Chain Fatty Acids**

Epstein-Barr Virus (EBV) causes infectious mononucleosis and was one of the first human viruses linked to a variety of cancers. EBV lives in two lifestyles, a latent and a lytic life cycle. Expression of the viral immediate-early gene BZLF1 triggers the latent/lytic switch in the virus. Targeting this switch is important for preventing spread by keeping the virus from reactivating. Sodium butyrate (NaB) activates the expression of BZLF1 gene and serves as an HDAC inhibitor in the cells. We have observed that short-chain fatty acids, propionate and valerate, also induce BZLF1, but not as potently. However, branched medium-chain fatty acids such as valproate and valpromide inhibit BZLF1 expression in Burkitt lymphoma cells. Asource of naturally occurring short chain-fatty acids can be found in the metabolic pathways of amino acids. To determine the effects of other short chain-fatty acids, leucine metabolite 4-methyl-2-oxovalerate was tested for effect on EBV-positive Burkitt Lymphoma cells. Using RT-qPCR, the effects of these molecules on BZLF1 expression was measured both accompanied by NaB and without. The administration of 4-methyl-2-oxovalerate had no observed activation of the viral lytic cycle. When introduced with NaB, this metabolite showed a slight increase in activation of BZLF1 compared to NaB alone. Investigations of the effects of other short-chain fatty acid metabolites on EBV reactivation and histone acetylation are compared. Discovering regulators of EBV will aim to understand the natural viral life cycle and to promote the development of clinical solutions for EBV related diseases.

Dutkiewicz, Hunter

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hunter Dutkiewicz,
Melissa Gregg,
Alex Behnke

Abstract Name: **An EEG Investigation of the Discrepancy Between Auditory and Visual Memory**

Previous research has indicated that visual recognition memory has a much larger capacity than auditory recognition memory. The purpose of this study was to investigate the disparity between the two memory systems by examining the neural circuitry involved in accurate recognition of visual and auditory stimuli, to examine the size of the discrepancy between auditory and visual memory across the lifespan, and to measure the relationship between working memory ability and recognition memory. In Experiment 1, participants completed a recognition memory task while neural responses were recorded with a 32-channel Brain Vision EEG system. Participants received a study phase with pictures/sounds, followed by an immediate recognition memory test. During the memory test, participants were presented with pictures/sounds that were old (presented during study), new (not presented during study), or exemplars that were variants of objects presented during the study phase. Participants were instructed to classify each picture/sound as “old” or “new” by pressing a corresponding key. In Experiment 2, participants ranging from 18 to 65 years of age completed a working memory assessment, followed by the recognition memory task from Experiment 1. The data analyses have the potential to indicate whether the discrepancy between visual and auditory memory is related to changes in gray matter density of the prefrontal cortex as we age. The results of this study will also improve our understanding of the connections between auditory memory, visual memory, and general cognitive ability and will allow a better understanding of the relationship between memory and general cognitive decline.

Dyavanapalli, Charan

Institution: *MO - Truman State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Charan Dyavanapalli *Christine Chen* *Hannah Zimmerman* *Alex Platt*

Abstract Name: **Computational Analysis of A Potential Inhibitor affecting Amyloid Beta Aggregation relevant to Alzheimer's Disease**

Alzheimer's Disease (AD) is a neurodegenerative disorder that impairs cognitive functions and memory retention of brain tissue and its symptoms can hinder the ability to perform daily activities. With the use of computational methods, this project looks for a molecular cause of AD. A chemically adhesive protein called Amyloid β (Aβ) aggregates and aids the development of AD by forming plaques in the brain. This protein consists of 42 amino acids that form Aβ aggregates, which are stabilized by intermolecular interactions, a rigid hydrophobic effectand hydrogen bonding within the backbone atoms of peptides gathered in the brain.We aim to discover a drug that disrupts these interactions. We investigate the efficacy of several polyphenols, which are associated with modulation of AD pathology. A polyphenol has aromatic carbon rings and hydroxyl groups that interact with Aβ which can destabilize itsstructure. We hypothesize the polyphenols form hydrogen bonds and π-stacking with aromatics and prevent Aβ aggregation. We use computational chemistry techniques, such as molecular docking and molecular dynamic simulations, to model interactions between Aβ and these polyphenols. Such molecular dynamic simulations can locate where a ligand binds to Aβ and predict how such ligand interacts with Aβ in human physiological conditions. From our previous work, thepotential inhibitors known as Purpurogallin (PUR) and Calebin A (CAL) werefound to help disrupt the Aβ aggregates. An analysis of binding free energies, root mean square deviations, root mean square fluctuations, hydrogen bonding and β-sheet percentages on PUR bound to Aβ and compared to Aβ by itself were perfomed to investigate the effectiveness of the polyphenols. Based on the results, PUR serves as a possible treatment for AD as the polyphenol displays a reduced β-sheet content compared to the protein on its own while CAL shows a reduced content of backbone hydrogen

Dyer, Evelyn

Institution: *WI - University of Wisconsin-Stout*

Discipline: Biology

Author/Contributors:
Evelyn Dyer

Abstract Name: **Repurposing Nutrient-Rich Sediment from a Eutrophic Reservoir**

Lakes Menomin and Tainter are reservoirs within the Red Cedar Watershed, Wisconsin. They experience harmful algal blooms (HABS) due to high nutrient loading from agricultural and residential areas. Phosphorous and nitrogen runoff into the aquatic systems, fueling the HABs. Wetland restoration is not a common management practice within lakes and reservoirs; it can be a viable solution for disposing of nutrient-rich, dredged sediment. Organic matter in the sediment, is vital for plant growth and a source of atmospheric methane; these could be a valuable resource if harnessed. Chinampas are an indigenous Mesoamerican wetland structure for growing crops implemented in Mexico. There are few studies on traditional Chinampas; they have proven to support biodiversity and water quality. A fixed Chinampa-style raised bed was constructed to monitor Lactuca sativa Lettuce growth over 16 days within a hypereutrophic reservoir compared to an ex-situ location. Lactuca sativa was planted in various ratios of sediment to sphagnum moss: 25, 50, 75, and 100 percent sediment mixtures. The Chinampas Lactuca sativa 100 percent lake sediment grew significantly taller than the rest of the seedlings (0.05). Methane was captured, and the volume collected was used to estimate methane gas release in areas shallower than 3 meters across the reservoir. Methane ebullition over two days during the summer was 1.22 x 10-4 kg m-2 day-1. There is a source of methane production in the reservoir. Methane gas is a potent greenhouse gas that heats up the atmosphere to a higher degree than carbon dioxide. Finding a way to capture the gas emitted from the lake and convert it to carbon dioxide would reduce the impact of the lake's gas emissions. Lettuce growth within the lake supports Chinampas as a potential nutrient remediation strategy and other harvestable wetland species should be studied.

Dyer, Weiland

Institution: *MI - Northern Michigan University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Weiland Dyer,
Nicole Thomas,
Nicole Marion,
Adam Prus,
Amber LaCrosse

Abstract Name: **Psychoactive Treatments in a Mouse Model of PTSD**

Post-Traumatic Stress Disorder (PTSD) can be characterized as a complex mental disorder by its complications in cognitive functioning and behavioral deficits often onset by a traumatic event in one's life. Due to the limited efficacy of therapeutic interventions, the current treatment for this disorder includes psychotherapy, exposure-based therapy, and medications such as selective serotonin reuptake inhibitors (SSRIs) cultivated for the treatment of anxiety disorders. In recent years, different psychoactive substances with known psychotropic and hallucinogenic effects have been reviewed as novel treatments for acute stress disorders. Within the field of behavioral neuroscience, fear-eliciting paradigms are used to evoke and represent the acute stress symptoms that facilitate post-traumatic stress disorder. Within this study, sixteen C57 adult male mice were exposed to aversive shock stimuli within a novel operant chamber context. Four hours after the aversive stimuli, half of the mice were injected with Ketamine 30 mg/kg intraperitoneally and the other half received a saline injection. Twenty-four hours after the aversive stimuli, the mice were placed back into the chamber to monitor for symptoms of distress. The mice who received the saline injection associated the chamber with the aversive stimulus and exhibited freezing behaviors. Two weeks after the chamber exposure, all the mice were placed into an open field apparatus to assess for symptoms of generalized anxiety disorder. The mice treated with Ketamine had reduced fear generalization. This research concluded that Ketamine serves as a promising therapeutic treatment for anxiety and acute stress-related disorders.

Dykhouse, Emily

Institution: *MI - Hope College*

Discipline: Theatre and Dance

Author/Contributors:
Emily Dykhouse

Abstract Name: **?It?s Everything. Absolutely Everything?: Stage Management for The Revolutionists**

In an art form as reliant on vulnerability, communication, and connection as theatre is, a stage manager brings a sense of clarity and insight to all facets of the production process. However, when tasked with leading and guiding an incredibly small cast tasked with answering questions about intersectional feminism and creating art amidst catastrophe, the relationship-building and insightful abilities of a stage manager reach new heights. The stage management team augments, brightens, and guides ensemble work through analysis and active communication, and is central to shaping the rehearsal room and production team's mentality and communication of creative vision.This winter, I served as the stage manager for Hope College Theatre Department's production of The Revolutionists by Lauren Gunderson. I spearheaded the stage management team, which was responsible for coordinating production needs before rehearsal began, served as a point of contact, connections, and advocacy for the director, designers, and actors, and called light and sound cues during every performance, leading the show and preserving the director's vision following opening. By approaching The Revolutionists from the perspective of stage manager, I was able to strengthen relationships and solidarity with other femme performers and theatre artists in my department, and contribute to further intersectional forms of storytelling for my campus community.

Dzikowich, Emily

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Emily Dzikowich,
Marcia Miller-Rodeberg

Abstract Name: Identification and Characterization of a Soil Isolate Utilizing p-hydroxybenzoate as a Sole Carbon Source

The present study is aiming to identify and characterize a strain of soil microbe. The microbe was selected by its ability to utilize p-hydroxybenzoate as a sole carbon source when grown on minimal media. The goal of this study is to identify and characterize the microbe through the microbiologic and genetic analysis. The microbe will also be grown on a larger scale and harvested in order to begin testing for enzymatic activity of metabolizing the p-hydroxybenzoate carbon source. Since the microbe is grown aerobically, the metabolic pathway is expected to contain a hydroxylase and a dioxygenase. The crude cell extracts generated from the cell paste will be tested for this activity. Results from this work will be presented.

E. McCallum, Katherine

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Connor McKeown,
Katherine E. McCallum,
Chloe Meyer,
Philip Gillett,
Rahul Gomes,
Nora Mitchell

Abstract Name: A Deep Learning Approach to Automate the Analyses and Prediction of Function for Poplar Stomata

In plants, stomatal pores regulate the intake of carbon dioxide that enables and powers photosynthesis and the loss of water from the surface of leaves. Variations in stomatal size and density can thus reflect novel strategies that balance water loss with photosynthetic capacity. Poplars are an emerging model system for studying adaptation to climate change in tree species and exhibit variation in stomatal characteristics. Currently, many approaches used in collecting stomatal morphometric data require the manual measurement of microscope images of stomatal imprints by a trained individual using software such as ImageJ.The process can be extensive, inaccurate, and slow down long-awaited results after collection. Our process follows similar methods shown in Gibbs et al. (2021) but differs in the deep learning processes used. This study implements a deep learning method to automate the process of morphometric data collection. Images collected for our approach are accurately labeled using open-source software to identify stomatal pores and guard cells. The preprocessed images along with the generated segmentation masks are fed into the deep learning model. For our study, we will use UNet to segment and measure pixel values that correspond with measurements of stomatal cells and image region properties to measure the stomatal density from prediction. All experiments will be conducted on the University of Wisconsin-Eau Claire BOSE supercomputing cluster. These measurements can be combined with additional climatic data to understand quantitative measures of plant health and viability across geographical and environmental scales.

Eades, Grace

Institution: ***OK - Southern Nazarene University***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Grace Eades

Abstract Name: The Christianization of Norse Mythology and Its Ties to White Supremacy

Norse mythology has become the plaything of white supremacists. Between its use as a propaganda tool by the early 20th century Nazi and völkisch movements and its current use by neo-Nazi extremists, ancient Norse paganism has taken on the role of the "black sheep" of scholarly mythological study. In this paper, I make an apology for not only the study of Norse mythology but of Norse mythology itself. I will also seek to explain the ways in which neo-Nazi movements have unfairly co-opted a culture diametrically opposed to many of the beliefs intrinsic to their own white supremacist movements. Lastly, I will attempt to explain how this misalignment came to be in the first place. In doing so, this paper touches on four different elements of white supremacy–nationalism, racial purity, sexism, and eugenics–and methodically debunks their supposed relationship with the ancient Norse. This includes discussions of the genetically diverse DNA found within Viking remains, the way in which ancient Nordic people set up their civilizations, their complex sex-gender system that made biological sex largely irrelevant, and the way in which the ancient Nordics worshipped an ideal of physical deformity and disability. Finally, after presenting evidence put forth by experts in a variety of fields, ranging from archeologists to anthropologists to biologists, I will argue that the origin of Norse mythology's misappropriation lies within its original recording by Snorri Sturluson in the Prose Edda and his interjection of western Christian values onto a society that did not follow the same beliefs.

Eakins, Robert

Institution: ***UT - Utah Valley University***

Discipline: Biology

Author/Contributors:
Robert Eakins,
Quinn Legere,
Taylor Roney,
Jed Whetten,
Olga Kopp

Abstract Name: Effects of Tea Tree Essential Oil on Escherichia Coli & Staphylococcus Aureus

Melaleuca alternifolia (tea tree) leaves have been used throughout many cultures around the world to help heal wounds and injuries because of its anti-inflammatory and anti-microbial properties. Some essential oil companies claim that tea tree essential oil contains purifying capabilities for air and contaminated surfaces. Essential oils are synthesized by many methods, the most popular being steam distillation. The essential oils, once purified, are sold to customers so they can use the oil to benefit from the plant's physiology and metabolic processes. In attempts to inform the scientific community about the antibacterial properties of the essential oil, we tested whether tea tree oil possesses the ability to fight common infections to any significant degree. We grew Escherichia coli; Staphylococcus aureus and measured the zones of inhibition in response to different concentrations of the essential oil. We also tested two different brands of tea tree oil, dōTERRA and Lagunamoon. We found that dōTERRA tea tree oil exhibited antibacterial properties while the Lagunamoon oil did not.

Easley, Ashlyn

Institution: *AZ - Northern Arizona University*

Discipline: Public Health

Author/Contributors:
Ashlyn Easley

Abstract Name: **High School Gateways: An Intervention Introducing Underserved High School Students to Healthcare Professions**

Objectives: This intervention targeted high school students in Flagstaff, Arizona to introduce them to various healthcare professions available through higher education with the long-term objective of reducing the healthcare provider shortage in rural northern Arizona. The Center for Health Equity and Research at Northern Arizona University reports that individuals living in rural areas in Northern Arizona lack opportunities for education and employment and experience a lack of proximal providers and specialty services (Sanderson et al., 2017). This intervention aimed to increase participants' knowledge about and interest in healthcare careers and increase self-efficacy regarding college applications. This program also aimed to increase college admission and enrollment rates for participants. Methods: This intervention was implemented over three days at an alternative education high school in rural Arizona. Participants attended 1.5-hour workshops each day, covering topics such as health professions and college applications. Intervention activities included mock college applications and interactive healthcare career roadmaps, which were designed around the Transtheoretical Model of Behavior Change. Results: This intervention was evaluated via pre- and post-surveys. This intervention was successful in meeting two out of three impact objectives: 67% of participants were able to explain the core components of at least three healthcare careers and 38.56% of participants expressed increased confidence in applying for higher education programs. Conclusions: Evidence-based initiatives, such as the one described for this project, can be replicated and utilized across rural high schools to increase interest in healthcare professions and address future healthcare provider shortages. Significance: Rural Arizona communities often lack opportunities for higher education and are strongly affected by provider shortages. Working with younger generations to increase access to higher education and encouraging students to pursue healthcare careers can help bridge this gap and improve healthcare access in these communities.

Eastham, Chase

Institution: *KY - University of Kentucky*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Peter Nagy *Shifeng Zhu* *Wenwu Lin*
Chase Eastham

Abstract Name: **Defining Domains of a Recruitment Protein in Tombusviridae Essential for Viral Replication Organelle Formation**

Tombusviridae is a family of positive sense, single-stranded RNA viruses that infect a wide variety of vegetation, including food sources such as tomato and cucumber plants. Due to the relatively small genomes of these viruses, a master regulatory protein (p33) recruits a plethora of co-opted host factors to form viral replication organelles (VROs). The VROs are considered viral-induced membranous organelles, which protect the viral replication complexes (VRCs) from host RNases. The formation of VROs depletes the cell of resources essential for vital metabolic processes. Exhausting cells can lead to leaf mottling and eventually result in plant death. As the global population continues to grow, the demand for food will increase. Investigating the interaction between p33 and host factors will provide information necessary to develop targeted antiviral agents. These agents will aid in decreasing cell exhaustion and increase the yield of crops necessary to feed a demanding population. This project focuses specifically on the interaction between p33 and peroxisomes. The transmembrane domains of p33 insert into the membranes of peroxisomes; causing a series of events leading to an irregular aggregation of said organelles within the cytosol. Directed deletions of different domains of p33 can help determine which specific amino acid sequences are necessary for co-opted recruitment of peroxisomes. It is anticipated that any deletion in the ORF gene (ORF encodes the master regulator) that results in knocking out amino acid sequences located in either of the transmembrane domains of p33 will result in failed VRO formation. Much previous literature has confirmed the necessary dimerization of p33 proteins. Thus, introducing a mutant p33 (incapable of forming VROs) to cells infected with a virus within the family of Tombusviridae may prevent wildtype master regulators from aggregating peroxisomes in the cytosol. Without the formation of VROs, progeny viral RNA cannot be synthesized.

Eaton, Madison

Institution: *NC - Elon University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Madison Eaton

Abstract Name: Soil Carbon on Campus

Soils have been identified as a potential major carbon sink, and as carbon emissions continue to increase around the world, attention is being turned to soils as a possible way to offset these emissions. Healthy soils may be able to sequester carbon from the atmosphere in a variety of different compounds, storing it underground for many years. College campuses are a unique place to study soil carbon sequestration because they typically have ample green space that can be closely monitored and maintained by the university. While prior research on college campus soil carbon sequestration has focused on the role of land cover, the call to further investigate the role of soil compaction is based on related research in agricultural environments. This study seeks to examine whether land cover or soil compactness has a greater effect on soil carbon sequestration on a college campus. The study area is the Historic Neighborhood of Elon University in North Carolina which is the oldest area on campus, established in 1889. This part of campus features many different types of land cover with varying soil compaction levels. Areas of different land covers have been mapped using GIS software and will be ground-truthed in order to provide error estimates throughout analysis. Soils of low, moderate, and high compaction have been identified and GIS will be used to select random points within each land cover and soil compaction classification for sampling in order to mitigate the potential for researcher bias. Soil samples from each point will be analyzed using an automated soil carbon analyzer to determine the total amount of soil organic carbon (SOC) present. The results of this study will inform best management practices for university landscaping crews to promote soil carbon sequestration on Elon's campus.

Ebersole, Mayelin

Institution: *PA - Duquesne University*

Discipline: Biology

Author/Contributors:
Mayelin Ebersole,
Meghan Wells,
Wook Kim

Abstract Name: Construction of chimeric proteins to characterize the functional specificity of the post-transcriptional regulator RsmE in Pseudomonas fluorescens

RsmE is a post-transcriptional regulator in the bacterium Pseudomonas fluorescens that forms a heterodimer to sequester multiple mRNA and repress their translation. P. fluorescens also harbors two RsmE paralogs: RsmA and RsmI. Although Rsm paralogs are generalized to be functionally redundant, we have recently demonstrated that RsmE exclusively represses the production of extracellular secretions that collectively function to create remarkable spatial structures in a densely populated colony. The core peptide sequence of Rsm paralogs are highly conserved, with the same set of predicted secondary structures. In contrast, the C-terminus tail region of the paralogs does not appear to encode any secondary structures and varies greatly in sequence. Deleting the tail region of RsmE abolishes its repressive activity, we thus hypothesize that the C-terminus tail specifies RsmE's unique function from its paralogs. We constructed three chimeric proteins, RsmE core fused to the tail of RsmA, RsmE, or RsmI, with the expectation that only the RsmE core and RsmE tail construct (RsmE/E) will restore the repression of extracellular secretions in an rsmE knockout strain. Indeed, we observed that RsmE/E restores the repressive function while RsmE/A fails to do so. However, RsmE/I also restored repressive activity, indicating that the tail of RsmI could functionally complement that of RsmE. We are now in the process of constructing additional chimeric proteins to comprehensively decode the functional differences and similarities among the Rsm paralogs. The C-terminus tail sequences of individual orthologs appear to be highly conserved among Pseudomonas species, suggesting that the functional specificity assigned by the tail of Rsm homologs manifests across diverse environmental niche.

Ebert, Sarah

Institution: *IA - Iowa State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sarah Ebert,
Pranav Shrotriya,
Prashant Gargh

Abstract Name: **Magnetic field assisted alleviation of fast-charging induced damage in Li-ion batteries**

Lithium-ion batteries are the predominant energy storage technology for electric vehicles and mobile devices. One limitation of this technology is the deposition of lithium metal on the anode during fast charging, which reduces battery capacity and increases the risk of thermal runaway. My research explores the effect of an externally applied magnetic field on interfacial anodic degradation when charging at high C-rates in lithium-ion batteries. Lithium deposition occurs because of non-uniform ionic flux through the battery's separator. A magnetic field applies magnetohydrodynamic forces on the lithium ions and homogenizes the ionic transport, which can reduce the deposition. Our group has demonstrated that magnetic fields can reduce lithium deposition and used electrochemical impedance spectroscopy (EIS) to monitor the lithium deposition and stripping during fast charging. We expand on these results by charging and discharging for several cycles while performing EIS measurements to monitor the influence of a magnetic field on plating and stripping of deposited lithium. We perform charging experiments at C-rates ranging from 0.1C to 5C under a magnetic field and compared the EIS results to experiments with no magnetic field. We use 20, 50, 250, and 300 mAh capacity pouch cells with a graphite anode and a lithium cobalt oxide cathode in our experiments. Findings so far show insignificant effects of the magnetic field when slow charging at 0.1C over 5 cycles. This supports our hypothesis because lithium deposition doesn't occur at very low C-rates, so the results from the cycles with the magnetic field and without should look similar. After analyzing results at higher C-rates, we will perform post-mortem analysis of the anodes to see if the differences in performance relate to differences in lithium deposition.

Eby, Lauren

Institution: *VA - Virginia Commonwealth University*

Discipline: Public Health

Author/Contributors:
Lauren Eby

Abstract Name: **The Adoption of Music Therapy in Child Vaccination Procedures: Reducing Anxiety Levels in Children and Parents to Increase Vaccination Rates**

The anxiety felt by children surrounding vaccinations has contributed to a decrease in pediatric vaccination rates within the past two decades. Though, using distraction methods during pediatric vaccination procedures has shown the tendency to decrease anxiety and improve the overall experience. Previous studies have explored the effect of music therapy as a method of distraction on anxiety during various medical procedures, such as dental and cardiac procedures, however pediatric vaccination procedures have not previously been explored. This proposed study aims to develop a protocol for music therapy to be implemented into pediatric vaccination procedures to decrease the anxiety experienced by patients and eliminate the resurgence of preventable illnesses. In pediatric patients, needle anxiety is common, especially surrounding vaccinations. The possible implementation of music therapy would not only be a cost-effective method of distraction compared to other methods, but it may also allow for reduced anxiety, as music may be used to cope with feelings of anxiety. The implementation of music therapy in vaccination procedures may be conducted by enabling pediatric patients to use a tablet device with the capability to play music off of a music database, in which patients are able to choose the genre and songs they will listen to throughout the procedure. Within this study, there are two key pieces: 1) developing a protocol for music therapy to be implemented into pediatric vaccination procedures and 2) exploring the effect of music therapy on anxiety levels in pediatric patients. This study would expand research on decreasing anxiety in patients with needle anxiety, provide a basis for a more calming procedure to be further developed, and examine the effects of potentially increased vaccination rates on the resurgence of preventable illnesses.Keywords: pediatric patients, vaccinations, needle anxiety, anxiety, music therapy, parental anxiety, vaccination rates, dopamine, calming, relaxation, trypanophobia

Echeverria, Esperanza

Institution: ***OK - Southern Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Esperanza Echeverria,
Scott Drabenstot

Abstract Name: The Priming Effects of Gratitude on Hope Among COVID-19 Vaccine Clinic Patients

COVID-19 has had an enormous impact on society, but can practicing gratitude make us more hopeful amidst adversity? The onset of the pandemic fostered newfound fears of death and increased general anxiety for the future. Previous research on the positive effects of practicing gratitude, such as the facilitation of hope and relationship reinforcement, serve as pathways for fostering healthy outlooks and coping mechanisms in light of adversity. The purpose of this study is focused on the priming effects of gratitude on hope. This research, distributed by survey, was conducted at a vaccine clinic where patients who received their first or second dose of the COVID-19 vaccine were in their 15 minute waiting period post-injection. Our findings yielded a small effect with no significant relationships between gratitude and hope aside from an association between age and levels of hope. The results of the research are analyzed and expanded upon in the discussion portion of the study. Ideally, the findings of this research study would provide enlightenment in regard to the positive effects of gratitude and its facilitation of hope within the context of hardship.

Echols, Serena

Institution: ***GA - Spelman College***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Emerson Peaslee,
Serena Echols,
Grey Caballero,
E. Christian Wells

Abstract Name: Environmental Justice from the Ground(water) Up: Coping with Contamination in Tallevast, Florida

This research explores the history of groundwater contamination in Tallevast, Florida and how community residents have responded with coping strategies and environmental justice organizing. Tallevast is an historically segregated African American community in central Florida where residents discovered groundwater contamination from a local manufacturing plant. Since then, studies have documented high rates of cancer and other diseases. Using oral history interviews, we document the social, political, and economic strategies community residents developed in response to the contamination and health outcomes. These strategies focus on environmental justice activism that emphasizes community organizing, local citizen science efforts, and university-community partnerships.

Eckert, Nickolas

Institution: *NC - Western Carolina University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Keanu Ammons,
Nicholas Eckert,
Joaquin Layno,
Channa De Silva

Abstract Name: **Nuclear Fuel Remediation: A Computational Study**

Increased global attention on sustainable energy initiatives sparked renewed, global interest in nuclear energy. However, asignificant pitfall of nuclear energy is the production of high-level nuclear waste (HLW) with an extensive half-life. HLW waste storage poses a significant environmental and security risk. Remediating spent nuclear fuel (SNF) using nitrogen and sulfur-based chelation agents is a promising venture for recycling HLW into usable fuel or stable, nonradioactive compounds. This research paper aimed to perform computational studies on various nitrogen and sulfur chelation agents to determine if such agents are viable options for SNF remediation. The 6-31G(d) and MWB60 basis sets were used with Gaussian simulation software to perform computational simulations on viable chelation agents. Of the various agents studieddimercaperol, diethylenetriamene pentaacetate, and ethylenediaminetetraacetic acid appear to be the most promising in producing stable compounds from SNF byproduct. Thermodynamic and thermochemical properties of independent molecules were analyzed and documented to determine if stable compounds are possible. Lanthanide and actinide molecules were analyzed and documented for future research. Current simulations indicate promising results for dimercaperol in producing stable compounds for remediation; future research on this topicshould aim to understand if newly discovered compounds are applicable to industrial waste treatment processes.

Eden, Kamryn

Institution: *UT - Weber State University*

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
Marlene Stephani,
Kamryn Eden,
David Aguilar-Alvarez

Abstract Name: **Tapering Before NCAA Division I Cross-Country Competition Reduces Plasma HDL-C But Has No Effect on Structural HDL Apolipoproteins**

Exercising has shown to increase HDL-C levels in most populations, however it is uncertain if it has an effect in structural apolipoproteins such as apolipoprotein A1(Apo-A1) expression and secretion. Cross-country athletes undergo a period of tapering before competition resulting in reduced physical activity. The purpose of this study was to determine if the changes in physical activity that cross country athletes experience during the season and in preparation for competition affects their HDL-C. We hypothesize that the tapering period will result in reduced HDL-C and its structural apolipoproteins.Twenty seven D-I cross-country athletes, ages 19 to 25 years old, were followed for one season (four months). Blood was collected at the beginning of the season and analyzed for HDL-C levels through enzymatic spectrophotometry using the Alfa Wasserman Ace Axcel® biochemistry analyzer. Apo-A1 and Apo-CIII were measured through Luminex® MAGPIX® multiplex assays. Paired-samples t-test comparing the preseason (pre) vs postseason (post) values was performed using IBM® SPSS Statistics 25.HDL-C levels decreased significantly from pre = 64.2 ± 2.7, vs post = 60.7 ± 2.5 mg/dL p = 0.03. Apo-A1, 92.3 ± 6.5 vs 88.8 ± 6.8, p = 0.23 and Apo-CIII 13.8 ± 0.1 vs 13.3 ± 0.5, p = 0.37 showed no statistical difference from pre vs post.Our study shows that HDL-C levels are decreased by a period of time as short as 4 months. However, we did not observe a change on apolipoproteins A1 or CIII. These findings suggest that although exercise can modulate lipidation of the HDL particle through the process of cholesterol esterification in the reverse cholesterol transportation (RCT), Apo-A1 expression and secretion may be modulated independently of this process as we did not observe any changes in apolipoprotein concentrations.

Edulakanti, Dheeraj

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Psychology/Neuroscience

Author/Contributors:
Dheeraj Edulakanti
Kristen Hays
Courtney Peterson
Gabrielle Gloston
Mackenzie Hogue
Karen Gamble
Rebecca Williams
Neel Patel
Justin Thomas

Abstract Name: Circadian Rhythm Impact on Blood Pressure Dipping in African American Adults

Blood pressure (BP) exhibits a diurnal rhythm, wherein BP decreases during sleep and increases just prior to waking up. Elevated systolic BP (SBP) levels and SBP that does not decrease by at least 10% (“non-dipping BP”) are associated with increased cardiovascular morbidity and mortality, particularly among African American individuals. The objective of this study was to determine the contribution of the endogenous circadian system to nighttime SBP levels in African American adults. We used a 30-hour constant routine (CR) protocol, which is considered the gold-standard method for examining circadian rhythms in humans. In a CR protocol, activity, light, and meal timing are held constant by keeping the participant sitting upright in bed, keeping the room dark (<10 lux) while also blocking blue light exposure using filters on electronic devices, and giving the participant hourly iso-caloric snacks. During the CR protocol, we measure BP every 30 minutes and continuous core body temperature via ingestible thermometer. Recruitment is ongoing, but 20 normotensive African American adults with an average age of 37 years, have completed the study. Based on 24-hour ambulatory BP monitoring, 12 out of 20 (60%) participants had non-dipping SBP at baseline. The average clinical SBP for dippers and non-dippers was 113 mm Hg and 114 mm Hg, respectively. The average clinical diastolic BP for dippers and non-dippers was 68 mm Hg and 69 mm Hg, respectively. The average percent dipping was 17.2% and 5.7% for dippers and non-dippers, respectively. During the CR protocol, there was an absence of BP dipping during the nighttime period. However, both dippers and non-dippers exhibited a robust rhythm in core body temperature. These data suggest that the contribution to BP dipping may be minimal and that lifestyle and behavioral factors, such as meal timing, sleep, and physical activity levels, more strongly influence nighttime BP levels.

Edwards, Ty

Institution: ***TX - Texas Lutheran University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Ty Edwards,
Ridwan Noel

Abstract Name: Fake News Detection using Machine Learning Approaches

In this research, we focus on creating an automated fake news detection system using natural language processing of news texts. We investigate different machine learning-based classification techniques to predict whether a text is real or fake news. We also perform a comparative analysis of the accuracy of the different applied techniques. For our experiments, we implemented several white-box machine learning models, e.g. logistic regression, decision trees, multinomial naïve Bayes classifier, and black-box machine learning models, e.g. support vector machine (SVM)and neural networks-based multilayer perceptron(MLP). Additionally, we implemented an ensemble technique called stacking,which utilizes the previous models as base models for prediction and uses a meta-model for the final classification.

Egan, Lily

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Katie Stetzer *Lily Egan* *Abby Arend*
Tom Sather *Lesley Mayne*

Abstract Name: Perceptions of Social Media's Educational Value in Relation to Evidence Based Practice

This project evaluates the educational value of social media platforms including TikTok, Instagram, and Twitter as course-based learning supports in an online graduate-level aphasia course. Components of evidence-based practice (EBP) in each of the three social media platforms are analyzed against student posts. These components include client perspectives, clinical expertise, and internal/external evidence (ASHA, n.d.). Additionally, student perceptions regarding the utilization of social media in course-based assignments are analyzed.Individually, TikTok (Escamilla-Fajardo et al., 2021), Instagram (Carpenter et al., 2020), and Twitter (Hull; Dodd, 2015) indicate a positive response among students and faculty in higher education. Social media in a classroom setting can help co-create knowledge, facilitate different learning styles, promote experiential learning, and enhance collaborative skills (Stathopoulou, 2019). Though each of the platforms are continuously rising in popularity, there is a substantial absence of conducted research studies that evaluate them holistically. A course-based assignment requiring use of each of the three social media platforms was assigned to 24 graduate students in an online aphasia-related course. Six prompts were presented every two weeks, and students used their assigned social media platforms to explore and develop answers to the prompts. Platforms were rotated across all students, so each student used each platform twice.The social media relics submitted by students were categorized based on the three components of the EBP triangle. Frequency counts for the presence of EBP domains within submissions for each platform will be presented. Additionally, student perceptions of each platform, their learning benefits, and their comparative value to the other course assignments will be discussed. Results will be discussed and applied to potential course-based pedagogical applications using social media platforms.

Egeland, Ella

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Abbey Joyner

Abstract Name: The Associations between Belongingness, Trust, and the Willingness to Donate to One?s Alma Mater

Donations are a vital part of keeping universities up and running across the globe. Thus, it makes sense that universities have a vested interest in fostering relationships with students that will generate future donations. This study examines the degree to which feelings of belongingness, trust, and engagement in campus activities affect an individual's willingness to donate to their alma mater. The 72 participants in this study represent a diverse group of students at the University of Wisconsin-Eau Claire. The findings indicate that feelings of belongingness with the university and the belief that one can trust the university are more strongly associated with a willingness to donate. Engagement in campus activities was not significantly associated with a willingness to donate. Thus, we learned that while it is important for a university to provide opportunities for students to engage in campus life, the university should spend equal time fostering a sense of belongingness and trust with their students.

Eggert, Madison

Institution: ***IL - Trinity Christian College***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Madison Eggert *Danyelle Luckett*

Abstract Name: **Pride Versus Prejudice: A study on the approach to race and sexuality by faith affiliated counselors and counselors in training**

Despite training inmulticultural counseling, counselors demonstrate a gap in integrating what they have learned into clinical practice (Owen et al., 2011; Rutherford et al., 2012). The purpose of this mixed methods study is to examine the responses of religiously affiliated counselors torace and sexuality. Thirty-five participants completed the following scales measuring religious affiliation and multicultural competency: Quest scale (Baston; Schoenrade, 1991), I/E-R Scale (Gorsuch; McPherson, 1989), Revised Religious Orientation Scale (Gorsuch; McPherson, 1989), Multidimensional Cultural Humility Scale (Gonzalez et al., 2021) and The Lesbian, Gay, Bisexual, and Transgender Developemnt of Clinical Skills Scale (Bidell, 2017). Participants answered open ended questions addressing theirbeliefs and clinical training. Themes emerged wherein participants described issues of race and sexuality within their training; some demonstrated prejudice while others demonstrated open-mindedness, both groups used faith to justify their ideas. We found significant positive correlations between counselors' self-assessed competency in their LGBTQ+ clinical skills and quest orientation (N=35, r=0.348, 0.05), self-awareness and fundamentalism (N=29, r=0.416 0.05), as well as significant negative correlations between extrinsic religiosity and supportive interactions (N=35, r=-0.336, 0.05), and intrinsic religiosity and LGBTQ+ clinical skills (N=35, r=-0.418, 0.05). This suggests that quest oriented participants, who allow themselves to wrestle with their religion,had higher self-assessed competencein providing care to the LGBTQ+ community as opposed to those who are more traditionally religious.Dataalso suggests that those who have rigid religious beliefs had more self-awareness. Overall the data suggest that a counselor's faith influences their ability to work with issues of race and sexuality. By having a clearer understanding of the relationship between religiosity and multicultural competency, counselor training can foster integration of multicultural principles in counselor practice.

Eggert, Maeghan

Institution: ***VA - Liberty University***

Discipline: **History**

Author/Contributors:
Maeghan Eggert

Abstract Name: **The Influence of Dunstan on Monastic Reform in 10th Century England**

Christianity has been an integral part of the development of England, particularly the establishment of its legacy of scholarship and literacy. However, the advances made in these areas were disrupted by the Danish invasions during the eighth and ninth centuries. The Danes targeted the churches and monasteries in their raids because the monks were craftsmen and produced fine items of great value. These raids were detrimental to the stores of religious literature and artwork accumulated in monasteries across the country. Religious education and the fine arts associated with the church were lost after the attacks. Saint Dunstan was an accomplished scholar and gained prominent roles in the Catholic church. He used his authority to institute monastic reform to rebuild and revive what had been lost. The basis for this reform, called Benedictine Reform, was modeled after the work of Saint Benedict of Nursia. Saint Benedict established monasticism's values and practices in the sixth century. The tradition of scholarship and artwork in England was restored with the return to those standards. The work of these monks was key to the preservation and reinstitution ofliteracy and authorship. Saint Dunstan's monastic reform affected the whole nation because it was through the institution of the church that much of life was organized. Education became more widely available due to this revival of scholarship in the church. Dunstan's efforts brought immediate change and set the foundation of English scholarship.

Eichinger, Erin

Institution: *MA - Bridgewater State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Erin Eichinger,
Jason Remick

Abstract Name: **How Women Communicate and Fulfill Sexual Desires**

Sexual desire has been recognized as the most universally experienced sexual response by men and women (Regan; Atkins, 2006), while also being one of the most subjective aspects of human sexuality (Mark et al., 2009; Meana, 2010). However, most of the research on sexuality is from a narrow lens that rarely highlights the positive aspects of women's sexual pleasure and desire (Jones, 2019). Additionally, there is no consensus on how to properly conceptualize and operationalize women's sexual desire (Brotto et al., 2009; Meana, 2010). Past research has assumed that women's sexual response cycle, and the ways they experience desire were identical to men (Brotto et al., 2009). Therefore, much of the research on sexual desire is through a heteronormative, male-centric lens, placing an emphasis on behavioral and physiological arousal responses to sexual desire. This has created a gap in the literature where women's individual and complex experiences with sexual desire may be overlooked or dismissed (Chivers; Brotto, 2017; Meana, 2010). Additionally, there is scant research on how women communicate desire to partners, which may be important in understanding how and if desires are fulfilled. The present study aims to understand women's lived experiences with desire through qualitative interviews. We are recruiting a diverse sample of 20-25 self-identified women.Using semi-structured interviews, women are beingasked about theirexperiences with sexual desire and the ways in which they communicate and fulfill desires. Through a feminist lens, we will be using thematic analysis to interpret the data. This study aims to offer new insights into women's desire and combat stigmatization around women expressing their desires.

Eickhoff, Connor

Institution: *MN - University of Minnesota - Duluth*

Discipline: Psychology/Neuroscience

Author/Contributors:
Connor Eickhoff,
Catherine Reich

Abstract Name: **The doubtful therapist: Can self-doubt be induced into therapists?**

The reason certain therapists are more successful than other therapists is paramount and largely a mystery. This study served the purpose to better understand the role of self-doubt (SD) in therapists by assessing the efficacy of a novel method for experimentally inducing SD in therapists. the therapists were randomly assigned to name different amounts of instances in therapy they felt confident, which meant to induce either high or low levels of SD and complete measures of SD and anxiety. This method of SD induction could be used by future researchers as it allows SD to be induced and studied in a laboratory setting. As expected, therapists in the high SD condition experienced higher levels of doubt and anxiety than those in the low SD condition. However, the degree of change caused by the manipulation was not drastic enough for statistical significance.

Eickstead, Cameryn

Institution: ***WI - Carthage College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Cameryn Eickstead *Olivia Wolf* *Giana Apostoli*
Jack DeSalvo *Alexandra Rynders* *Daniel Miller*
Sarah Terrill

Abstract Name: Effect of Central Ghrelin Receptor Signaling on Avoidance Behavior in Wistar-Kyoto and Sprague-Dawley Rats

Behavioral inhibition (BI) is believed to be a genetically determined trait which causes individuals to respond to stressful situations differently than their non-behaviorally inhibited (NBI) counterparts. This research has been extended to the rodent population wherein the Wistar-Kyoto (WKY) rat models BI anxiety-like behavior, and the Sprague-Dawley (SD) strain serves as a control. We have previously demonstrated that a single overnight fast can enhance avoidance responses in SD rats to the level of avoidance exhibited by WKY rats. Overnight fasting elicits a variety of physiological changes that might directly or indirectly contribute to avoidance and anxiety-like behaviors, including reduced levels of gastric distention, reduced circulating levels of glucose and leptin, and increased circulating levels of ghrelin and corticosterone. Here we sought to investigate potential mechanisms that contribute to the fasting-induced increase in avoidance behavior we observed in SD rats. Since fasting increases circulating levels of the hunger hormone ghrelin, we hypothesized that central ghrelin signaling may contribute to the observed behavioral effect of fasting. We tested this by examining the effect of central ghrelin receptor activation on our signaled lever press avoidance task in female WKY (n = 8) and SD (n = 8) rats. All rats were implanted with cannulas targeting the lateral ventricle (LV) and receivedintra-LV injections of ghrelin or saline 45 minutes prior to the signaled lever press avoidance session. Ghrelin did not affect avoidance in SD rats. Surprisingly, intra-LV ghrelin significantly reduced avoidance performance in WKY rats, which resulted in a significant increase in the number of shocks that WKY rats received following intra-LV ghrelin relative to saline treatment. These findings suggest that central ghrelin may have an anxiolytic-like effect in WKY rats. Additional studies are necessary to further elucidate mechanisms by which central ghrelin signaling affects mood-related behavior in both NBI and BI models.

eiland, Isabella

Institution: ***FL - The University of Tampa***

Discipline: Psychology/Neuroscience

Author/Contributors:
Isabella Eiland *Ava Piper* *Benjamin Marsh*

Abstract Name: Just Another Pretty Face? How Physical Attractiveness Affects Memory of Same-race and Other-race Faces

Undoubtedly, we have seen somebody casually going by and instantaneously determining whether they are attractive or not. Intuitively, attractive faces draw attention; thus one would expect they are memorable. Past studies have shown that faces outside of one's race are more poorly remembered than faces within one's race, a phenomenon called the cross-race effect (CRE). However, if attractive faces have a memorable quality, perhaps highly attractive other-race faces are remembered just as well as same-race faces. Thirty-four White female students studied 48 faces that were White, Latino, Black, and Asian and were classified as High attractiveness, Average attractiveness, and Low attractiveness. Afterward, their memory of those faces was tested by intermixing the studied faces with 48 new faces. Each face was presented one at a time alongside survey questions where they responded via mouse click whether they remember seeing the face. Additionally, we used an eye-tracking device to determine whether attraction or race influenced how long they looked at a face while taking the memory test. The results were rather surprising in that we discovered that more participants tended to recall faces low in attractiveness more accurately than faces high in attractiveness. Unsurprisingly, White faces were more accurately recalled than all other-race faces. Moreover, there was an interaction effect between race and attractiveness in that the CRE occurred among faces low in attractiveness, but not faces average or high in attractiveness. While this result was predicted, it was expected to be due to improved memory for other-race faces. However, it was largely due to poorer memory for same-race faces. As for the eye tracking data, participants visually fixated more often on high-attractiveness than low-attractiveness faces during the test phase. This behavior is either a sign of highly attractive faces' alluring quality or participants' uncertainty about their memory.

Einwalter, Verene

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Verene Einwalter

Abstract Name: **The Peculiar Intuitions of the Hard Problem of Consciousness**

All contemporary theories of consciousness must contend with the hard problem of consciousness. According to Chalmers, the hard problem is that if every physical function of the brain were to be described, the reason why these functions are accompanied by conscious experience would not be explained. I intend to undermine the hard problem by showing that it is a flawed intuition. Many have proposed theories that attempt to solve this problem, yet all non-physical accounts of consciousness encounter similar and peculiar issues. Substance and property dualism cannot adequately explain the causal relationship between mind and body, while panpsychism cannot explain how many small consciousnesses create a unitary, greater consciousness. In response to the hard problem, these theories propose something non-physical but cannot adequately explain how their non-physical something functions and relates to the physical world. The arguments that support the hard problem, such as Mary's Room, the Chinese Room, and philosophical zombies, exemplify a flawed intuition that underlies the hard problem and the theories of mind that ascribe to it. Human beings possess a flawed intuition that subjective experience is incompatible with physical explanation because experience seems incompatible with physical explanation. This is the flawed basis of the hard problem, and it manifests in the peculiar issues that each non-physical theory of mind faces. Scientific discoveries have proved repeatedly that intuitions mislead us, and a conclusive theory of mind cannot be based on a flawed intuition. The only way to solve the hard problem is to reconsider it, and reexamine our intuitions about experience.

Ejantkar, Suma

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Suma Ejantkar,
Prachi Umbarkar,
Hind Lal

Abstract Name: **Cardiac Fibroblast GSK-3? Aggravates Ischemic Cardiac Injury by Promoting Inflammation**

Myocardial Infarction (MI) is a leading cause of death worldwide. Glycogen Synthase Kinase-3 (GSK-3) has been identified as a promising therapeutic target for cardiovascular diseases. The GSK-3 family has 2 isoforms, α, and β. Previously, our lab identified fibroblasts (FB) GSK-3β as a negative regulator of fibrosis in the ischemic heart. However, the role of FB-GSK-3α in the ischemic heart is not well defined.To determine the role of FB-GSK-3α in MI-induced cardiac damage, GSK-3α was deleted in activated FBs using the tamoxifen (TAM)-inducible Periostin promoter-driven Cre recombinase. At 12 weeks of age, mice were fed with the TAM diet. After 1 week of the TAM diet, control and KO mice underwent MI surgery. Serial echocardiographic analysis revealed that KO mice were protected from MI-induced systolic dysfunction and dilative remodeling. To investigate the role of FB-GSK-3α in MI-induced chronic inflammation, hearts were harvested at 4 weeks post-MI and the expression of inflammatory genes was examined. Surprisingly, inflammatory gene expression was remarkably low in the KO group. To delineate the underlying mechanisms, we examined the effect of GSK-3α deletion on the key proinflammatory signaling, NF-κBpathway. WT and KO FBs were treated with TNFα. Western blot analysis showed a significant reduction in NF-κB activation in TNFα treated KO FBs.Additionally, co-culture experiments demonstrated that inflammatory gene expression was downregulated when immune cells were co-cultured withKO FBs. Our findings suggest that FB-GSK-3α plays a critical role in pathological cardiac remodeling and heart failure. Thus, it could be therapeutically targeted for future clinical applications to reduce post-MI complications.

Eller, Olivia

Institution: *NC - Elon University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Olivia Eller,
Mathew Gendle

Abstract Name: **Yoga Flow Class Impacts on Test Anxiety in University Undergraduates**

This study investigated how participation in introductory yoga flow classes offered by a university campus recreation department might reduce test anxiety and general anxiety levels more broadly in first and second year university undergraduates. Anxiety is an unfortunately common component of the undergraduate student experience in the U.S. Test anxiety, an increased state of emotionality and worry regarding examinations and schoolwork, affects undergraduate student populations. Behavioral approaches to anxiety management, such as yoga classes, can be advantageous within higher educational settings and can play an important clinical role in managing anxiety symptomology in undergraduate populations without the potential drawbacks of pharmacological intervention. This project attempts to contribute to the study of yoga as an economical, efficient, and accessible method of anxiety treatment for students in the United States. In this study, participants completed six survey questionnaires measuring resilience and anxiety before taking their first or second yoga class and then again after completing five classes within a span of sixty days. In this presentation, the observed statistical changes in self-reported test anxiety following participation in introductory yoga classes will be discussed. In conclusion, this study examines the efficacy of yoga as a means of managing anxiety symptoms in undergraduate populations. Yoga flow classes and similar interventions should be explored as potential alternatives to help students cope with the threat of test anxiety and stress.

Ellis, Harrison

Institution: *MN - Minnesota State University - Mankato*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Harrison Ellis,
Luke Halstead

Abstract Name: **Quantifying Benefits of Bridge Maintenance, Research Project for Minnesota Department of Transportation**

To improve decision-making standards based on life cycle cost-effectiveness, the goal of this research is to quantify the advantages of bridge preservation. The State Departments of Transportation (DOTs) have often used models developed by expert opinion to quantify bridge maintenance and preservation data. Due to data shortages, DOTs have conducted little prior study, making it difficult to accurately estimate the impact of bridge preservation efforts. The variation in performance for structures with various attributes, including as age, material, traffic volumes, and environmental conditions that they are exposed to, presents another difficulty in evaluating the influence of maintenance and preservation strategies. Additionally, because diverse characteristics result in different performances from bridge structures, it is challenging to recommend solutions for other bridges. To determine the efficiency of the various existing procedures in the state, it will be helpful to examine Minnesota DOT's history of bridge maintenance and bridge performance throughout time. Decision-makers will be informed on the best timing and kind of maintenance activities that will be the most cost-effective by a set of decision trees based on actual MnDOT project history. In this presentation, we will focus on District 8, which has additional data on maintenance activities that they have gathered. This is a sample of a larger MnDOT data collection that is currently under investigation, and it includes some extra information on work history.

Ellis, Jaden

Institution: *VA - Randolph-Macon College*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jaden Ellis,
Zachary Cullingsworth

Abstract Name: **The Effect of Varied Printing Parameters on Mechanical Properties of 3D Printed Materials**

Additive manufacturing builds 3D models from computer files by depositing layers of materials to create the part. This process of manufacturing has advantages over traditional subtractive manufacturing techniques, and to further utilize it, the materials need to be better understood. This study characterizes mechanical properties of multiple 3D printed materials. Additionally, parameters at which they were printed are varied to determine the most efficient and best-suited filament for different projects. For each material, PLA, PolyMax PC, Nylon, ABS, PETG, and Tough PLA, dog-bone specimens were printed at 0°, 30°, 45°, 60°, and 90° and 0.1mm, 0.15mm, and 0.2mm layer height (10 samples at each combination, for 150 total per material). Each specimen was tested in a Stress-Strain Apparatus by pulling the dog-bone away from the fixed end, thereby either breaking or stretching the specimen to completion. PolyMax PC had the highest average tensile strength of the 6 materials at 7.8 MPa, while Nylon had the lowest average tensile strength of 1.88 MPa indicating a significant difference in strengths of these materials (t-test, 0.05, PC vs. Nylon). The layer height showed that for half of the 6 materials, 0.1mm was the strongest and 0.2mm the weakest (t-test, 0.05, 0.1mm vs. 0.2mm PLA). PLA demonstrated the most brittle behavior (100% broke) while PETG was the most ductile (87% did not break). A ratio of tensile strength to time was defined, termed the efficiency ratio, to find the most efficient parameters for needed strength when considering print time. To provide a reference for future projects, this research characterized and analyzed materials by strength and relative ductility.

Elue, Chinasa

Institution: *GA - Kennesaw State University*

Discipline: **FAN Abstract**

Author/Contributors:
Chinasa Elue

Abstract Name: **Digging Deeper: An Exploration of Supportive Strategies and Resources Faculty and Student Research Teams Deploy When Researching Emotionally Difficult Topics**

In higher education settings, cultivating high-impact research experiences led by faculty in partnership with students is of high importance. The collaboration between the two is very important in training the next generation of researchers as well as providing critical research experiences that can be carried into their professional endeavors. As universities continue to encourage more interdisciplinary research among faculty and students, special attention is needed to create supportive and relevant research collaborations. As a faculty mentor, to a team of undergraduate and graduate student researchers, I have been intentional in fostering such collaborations through experiences that include but are not limited to data collection, extensive mentoring, writing workshops, and methodological guidance and training. Further, given the nature of faculty and student collaborations, the focus of our research topics has evolved over time. Currently, we are researching grief in higher education to better understand the types of support and resources needed to address the emergent mental health concerns rising on college campuses in our student body. As the lead faculty researcher, I have been especially intentional in thinking through what types of support my student researchers themselves may need when engaging in the research of an emotionally laborious topic such as grief. As a team, we have identified key strategies that have been instrumental in providing the supportive structures needed to engage in grief and trauma-related research. This short talk will provide an opportunity to speak with other faculty who may be studying emotionally difficult topics alongside their student researchers and would like to learn some of the strategies we have deployed to protect the mental well-being of our student researchers while they are engaging in noteworthy investigations to expand the knowledge base in our field.

Emadeldeen, Aya

Institution: *EGY - The American University in Cairo*

Discipline: **Environmental Studies**

Author/Contributors:
Mariam Jama,
Aya Emadeldeen,
Nadine Wael

Abstract Name: **Socioeconomic Vulnerability and Environmental Inequalities: a Case Study of Climate Change Impacts in Egypt's Delta Agricultural Sector**

Egypt's Nile Delta has historically had a significant impact and drawn a sizable population because of its abundant resources and trading opportunities. The Nile Delta faces a significant risk of being severely damaged due to flooding brought on by extreme climate change. Temperature increases, unpredictable rainfall patterns, and increasing sea levels are some of the effects of climate change on these cities. When we start to look deeper at the impacts of climate change on different groups of people, a question begins to pose itself. How are the effects of climate change distributed, and is it proportional to the level of contribution to emissions? The objectives of this research are to identify the detrimental effects and threats of climate change on farmers in Egypt's delta agricultural sector and the vulnerability of farmers. A hybrid methodology and system mapping were used to accomplish these objectives. Farmers and other internal and external stakeholders, including professionals, government officials, and NGO representatives, were also interviewed. The results of this study show and prove that farmers in Egypt's delta region are highly vulnerable due to ineffective practices and weak and inadequate government communication. The study also demonstrates that households with lower incomes and less access to natural resources are more vulnerable to the risk of flooding and sea level rise. Income disparities and asset distribution at the community level tend to be greater at higher risk exposure levels, suggesting that households with higher individual vulnerability also have higher collective vulnerability.

Enderle, Katelyn

Institution: *GA - University of West Georgia*

Discipline: **Biology**

Author/Contributors:
Katelyn Enderle,
Ally Shinall,
Jaylah Adams,
Dr. Frank Fontanella

Abstract Name: **Discovery and Extinction in a Biodiversity Hotspot**

Accurate species delimination and descriptions are a fundamental prerequisite for biological research. We are currently in the midst of the 6th mass extinction, with background extinction rates measuring 1000 times faster than species that the majority of life forms on Earth are facing. Conservation biology often aims to assess and protect existing biological diversity and is concerned with the sustainable use of natural resources over the long term. The assessment of biodiversity is the first step to the successful design of any conservation strategy. Identification of the organisms and the extent of morphological and genetic variability between them are the essential components of any biodiversity assessment. Amongst these, the identification of individual organisms via taxonomical and/or molecular means is vital for designing any conservation strategy. The patent leather beetle,Odontotaenius disjunctus and O. Floridanus,are easily recognized saproxylic (dead wood dependent) beetles with distributions extending across the eastern United States and restriced to the highlands of central Florida, respectively. recent studies inferred four well supported lineages that diverged during the Pleistocene and replaced each other geographically across the eastern United States. However, it has been shown that reliance on a single gene may be misleading because of asymmetrical gene flow, introgression, and other stochastic processes that affect mtDNA disproportionately. In this study, we use multilocus coalescent-based species delimination methods and multivariate analyses of morphological data to examine whether the phylogroups merit taxonomic recognition as species in light of multiple lines of evidence under the general lineage concept.

Endres, Mary

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Devyn Pfaff,
Brenna Moeller,
Ryleigh Lemanczyk,
Chrissy Headley,
Mary Endres

Abstract Name: Racial-Ethnic Identity and Academic Success B

There is immense discussion on what helps or hinders academic success. A person knowing who they are, no matter who, tends to know what they want and how to get it. This is not different in the academic setting. There are many different levels of understanding who we are within the culture from which we come. This study aims to connect several components of identity development with the resulting success in college. The aim is to see how the level of connection with one's racial-ethnic group, awareness of the perceptions by others and how one's racial-ethnic group is seen through the lens of academic achievement will impact the overall success in college. Other areas of interest in this study include college experience and how it impacts the motivation to attend classes and involvement in on campus activities connecting the student to the college leading to academic success. The final area that will be considered in this research is the level of college preparedness of the student and how the family or culture contributed to that preparedness. Correlational analysis will be completed through data collection in the spring semester of 2023.

English, Madeline

Institution: ***MI - Michigan Technological University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Madeline English *Manas Warke* *Camila Padilla*
Alexis Gasco *Wendy Leisner* *Rupali Datta*
Smitha Rao

Abstract Name: Cellular Model for Assessing Dermal Cell Response to Direct Soil-Arsenic Exposure as an Environmental Contaminant

Arsenic (As) is a carcinogenic metalloid with numerous routes of exposure. Exposure symptoms include gastrointestinal, neurological, and other health complications. The WHO and EPA have set exposure limits for air and drinking water. However, there are no guidelines for contact exposure. The baselines established in this research can serve as a springboard for safety protocols and establish guidelines for exposure via skin contact and provide insight into cell-As interaction. Conventional experiments studying environmental exposure use arsenic salts dissolved in water. This approach cannot represent the environmental conditions where the bioavailable Arsenic is affected by the soil conditions. Thus, the extraction of Arsenic from the soil is a crucial aspect.Therefore, As was obtained from soil samples using sequential extraction. Healthy Human Immortalized Keratinocytes (HaCaT) cells and healthy adult Human Dermal Fibroblasts (HDFa) cells were treated with four different concentrations based on 10-year accumulation of arsenic in soil (45, 225, 450, and 900 ppm of As), creating a cell model to assess arsenic exposure. In-cell Western/In-Cell ELISA was used to quantitatively assess cell responses. Preliminary data indicates that higher As concentrations lead to decreased cell proliferation and differences in cell migration among the cell lines tested. Higher concentrations of arsenic showed altered protein expression of Actin, CD44, and Zeb1, and displayed toxic effects. Arsenic uptake methods, localization of As within the cells, and long-term impacts of exposure will be explored to understand Arsenic uptake and cellular damage. The outcomes of this research will contribute to assessing damage from exposure to soil-As (high concentration or long-term exposure), provide guidance on exposure limits, and establish a safer environment for human settlements. These findings will create a better understanding of the hazards of exposure to heavy metals. The studies will inform new public health measures and provide guidelines for regulatory agencies.

Ensley, Courtney

Institution: *NC - Western Carolina University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Keanu Ammons,
Dr. Derek Gaston

Abstract Name: **Single-Hop Parallel Algorithm Comparison**

To address the need for high performance parallel communication algorithms for full-core nuclear reactor neutronics simulations, Idaho National Laboratory (INL) developed the Scalable Massively Asynchronous Ray Tracing (SMART) algorithm. This algorithm performs sparse communication of data structures while overlapping communication and computation, a key to achieving efficiency. This scalability study compared the computation time of 6 sparse data exchange algorithms in both strong and weak scaling experiments to determine the limitations of single-hop SMART algorithm; multiple single-hop algorithm parameters were independently scaled and analyzed. Extensive testing revealed the effectiveness and limitations of the single-hop SMART algorithm in both overlapping and non-overlapping communication models. Observed bottlenecks in single-hop implementation are discussed, and recommendations for further study are provided.

Entriken, Seth

Institution: *IA - Iowa State University*

Discipline: **Biology**

Author/Contributors:
Seth Entriken,
Kiernan Adair

Abstract Name: **Role of Gap Junction Proteins on left-right axis development in zebrafish.**

Directional nodal flow initiated by motile cilia in the left-right (L-R) organizer of developing embryos is required for proper establishment of L-R asymmetry. Previous work in zebrafish has shown that morpholino knockout of the gap junction (GJ) protein, connexin43.4 (gjc4b), causes disruption of the L-R organizer, Kupffer's Vesicle (KV), and correlated randomization of L-R asymmetry (Hatler et al., 2009). Interestingly, Zygotic indel mutants of connexin43.4 (gjc4b) do not disrupt L-R development of the heart, but maternal zygotic mutants do. Here, we present phylogenetic analysis of proteins related to gjc4b and various approaches for generating mutant lines in these genes. Guides generated for injection of inconnexin52.8 (gjc1) and connexin47.1 (gjc2) use the Geneweld method for integrating acassette with a primary and secondary marker into an exon of this gene. Whole gene knockout guides were also generated for connexin44.2 (gjc4a.1) and it's tandem duplicate gjc4a.2 involving the deletion of both genes and the ~65kb region between them. Injection of a gRNA targeting gjc1,homozygous embryos for gjc4band mutated gjc1 caused defects in L-R asymmetry. This indicates that loss of function in gjc4b is compensated or has overlapping function withother related genes.

Eom, Erica

Institution: *VA - Virginia Commonwealth University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Erica Eom

Abstract Name: **Addressing Body image in Child Actors**

Today's headline reads about another former child actor who was admitted for an eating disorder. The abnormally frequent occurrence of this challenged whether this was a consequence of fame, or if other external factors triggered concerns about body image. To address this curious pattern, I would like to ask and answer whether the history and experience of child actors can explain why these children could be at risk for developing severe mental disorders related to body image, such as eating disorders and depression. To understand how participation in the performing arts industry at a young age could influence future development, potential influencers of body image and self-concept in children are sought by looking at social comparison factors (such as relationships and social media). Additionally, to understand and apply the unique experiences of child actors to psychological well-being, their general psychology, testimonials, and origins are traced. While the investigation of this topic explains why former child actors are found at an increased risk for decreased psychological well-being, this does not mean direct involvement will cause psychological disorders related to body image during adult development. Given the high-stress nature of the performing arts industry, it is vital to consider how children generally respond to stress and use that information to equip them with the tools needed to adjust to adulthood.

Erb, Elizabeth

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Elizabeth Erb,
Riley Walske,
Ashley Tuszka,
Michelle DeBoer

Abstract Name: **Evaluating Plasma Vitamin A and E Concentrations in a Mature Horse Herd Housed in a Dry Lot or Pasture**

Vitamin A and E are adequately supplied to horses when they consume fresh pasture. However, horses in the Upper Midwest often become deficient during the winter months which can be detrimental to horse health. Considering the prevalence of deficiency has not been widely documented, this study aims to evaluate plasma vitamin A and E concentrations in the UWRF horse herd related to pasture versus dry lot housing conditions. Twenty-seven mature adult horses were used in the study. Thirteen horses were housed in a dry lot with hay-only access while fourteen horses had pasture access during the summer. All horses had access to a free-choice mineral and vitamin mix. Blood samples were taken in February (winter), May (spring), August (summer), and November (fall) and sent to Michigan State Veterinary Diagnostic Laboratory for analysis. Data were analyzed using PROC MIXED in SAS with significance set at P≤0.05. Adequate vitamin E was classified as 2.0 to 4.0 µg/ml and adequate vitamin A was classified as 175 to 300 ng/ml. In the winter and spring, 70 to 74% of horses were deficient in vitamin E with an average concentration of 1.83 µg/ml. Plasma vitamin E concentrations remained inadequate in dry lot horses in the summer at 1.43 µg/ml (P 0.05) while concentrations rose in pastured horses to 2.4 µg/ml (0.05). When evaluating vitamin A, 81% to 85% were deficient in the winter and spring, respectively, with an average concentration of 145 ng/ml. While pastured horses exhibited an increase in plasma vitamin A in the summer compared to dry lot horses (0.05), 64% of pastured horses remained deficient. These results demonstrate the prevalence of vitamin A and E deficiency in an Upper Midwest horse herd on a hay-only diet.

Erdman, Orla

Institution: *PA - Lafayette College*

Discipline: **Biology**

Author/Contributors:
Orla Erdman,
Dr. Khadijah A. Mitchell

Abstract Name: **Race and Radon Hotspots are Correlated in African American Pennsylvanians with Racial Disparities in Lung Cancer Incidence**

Background Lung cancer has the 3rd highest incidence in Pennsylvania (PA). African Americans (AAs) have higher incidence rates than European Americans (EAs), despite smoking less. Radon is the second leading cause of lung cancer. Radon, race, and AA lung cancer incidence varies by PA county. The majority of PA counties are in EPA Radon Zone 1 (4 pCi/L), significantly elevatinglung cancer risk.HypothesisRadon exposure is correlated with higher lung cancer incidence in AAs compared to EAs in PA zip codes. MethodsCompared lung cancer incidence by race across three counties using PA Department of Health EDDIE Database. Selected PA counties with three largest cities according to the 2020 US Census. Used US Census Data Tools Advanced Search to tabulate every zip code and AA and EA population % by county. Integrated basement and first floor radon exposures by zip code from PA Department of Environmental Protection. Performed Pearson's correlation analysis for Variable A (zip code population by race %) and Variable B (first floor and basement radon levels).ResultsAAs had higher early and late stage lung cancer incidence across Allegheny, Northampton, and Philadelphia counties. Allegheny County (Pittsburgh City) had 113 zip codes (Radon Zone 1 zip codes: 9% AA, 91% EA), Northampton County (Allentown City) had 48 zip codes (Radon Zone 1 zip codes: 15% AA, 85% EA), and Philadelphia County (Philadelphia City) had 26 zip codes (Radon Zone 1 zip codes: 0% AA, 100% EA). In Allegheny and Northampton County zip codes, the AA population % can explain 33% and 31% of first floor radon levels (R2 = 0.33, R2 = 0.31). This correlation is significant (Allegheny: P = 0.004; Northampton: P = 0.01).ConclusionAAs living in Allegheny and Northampton radon hotspots should be targeted for lung cancer screening, early detection, and radon testing initiatives.

Erickson, Brooke

Institution: *MN - University of Minnesota - Rochester*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Brooke Erickson,
Noah Shore,
Abraham Ayebo,
James Winchip,
Robert Dunbar

Abstract Name: **Exploration of Variables Associated with Reluctance to Speak in College Classrooms**

Controversial topics are important parts of discussion in many college classrooms. Due to the nature of these topics, students may feel reluctance in their desire to speak freely about them in an academic setting. Today, students may feel polarized as a reflection of the world outside of college campuses. The aim of this study is to explore the reluctance to speak about the controversial topics of gender, politics, race, religion, and sexuality. More specifically this study looks at what external forces may be influencing this reluctance. The Campus Expressions Survey is a nationally distributed survey created by the Heterodox Academy that asks students about their reluctance to speak about each of the five controversial topics. If they indicate that they are reluctant, they are then prompted with potential reasons for their reluctance to speak, which they answer with whether or not they agree with the statement. The sample consists of 207 UMR undergraduate students. A McNemar's Chi-Square test was used to analyze the results of the survey to determine if students were more concerned about criticisms from their peers, criticisms from their professors, or of their opinions being posted on social media. The results show that for the topics of Politics, Race, Religion, and Sexuality, students were significantly more concerned about their peers than about their professors or being posted on social media. This means that students are more concerned about how their peers perceive them directly than how their professors perceive them or how others perceive them online. This may be due to the fact that peers influence behavior more than professors and how social media affects in-person behaviors.

Ernst-Fortin, Lauren

Institution: *GA - Georgia College and State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lauren Ernst-Fortin,
Meredith Robertson,
Marley Lentine-Brown

Abstract Name: **A Pilot Study Exploring Veteran Identity Using Lyric Analysis in a Qualitative, Community-Based Participatory Action Research Framework**

Researchers attempt to define what it means to be a Veteran, but it is rare for that question to be directly asked of Veterans. Traditionally, experimenters define variables and ask the community of interest (CoI) to provide responses without the CoI being included in the research process or reaping any direct benefit from participation. There is a high degree of distrust and disenfranchisement reflected in Veterans towards the mental health care system and the scientific community. We aim to use the CbPAR model to amplify their voices and focus on what is important to them. We are seeking to allow Veterans to define their identity in their own words. Researchers serve as messengers to help amplify Veteran voices and disseminate their stories to the larger community. In the current study, we asked Veterans to identify songs that answered the question, "What does being a Veteran mean to you?" This study is part of a larger research project using both photovoice and lyric analysis to help define the "sights and sounds" of Veteran identity. Veterans worked individually with researchers through the process of lyric analysis, which is a music therapy intervention in which the client and therapist listen to a song together and discuss the connection the lyrics have to the client's life experiences. Transcripts of interviews will be analyzed to uncover common themes and elements that help researchers understand how they conceptualize their community identity as Veterans. External validity is addressed through member checking, in which participants will review transcripts, discuss identified themes, and choose representative songs to present as a part of an immersive, interactive gallery experience for the community to allow for their stories to be told. We assert that more research should be done with the Veteran community, not to them.

Erwin Davidson, Lisa

Institution: *CA - California State University - Fullerton*

Discipline: FAN Abstract

Author/Contributors:
Lisa Erwin Davidson

Abstract Name: **Feeding the Spark of Creative Inquiry Through Community-Engaged Practices: A Developing Model**

Problem and Background: First-generation college students and students from lower socioeconomic backgrounds and under-resourced communities continue to report that socioeconomic and sociocultural pressures remain high and interfere with their ability to fully achieve academic success and prepare for a professional career. Some undergraduates become disillusioned and disheartened when they have limited financial ability or time to participate in unpaid extracurricular activities. Some undergraduates believe that students with greater financial means hoard university leadership positions and are over-represented on faculty research projects. Current evidence suggests that underrepresented undergraduate students can benefit from (a) individualized faculty mentorship giving strong support for applied learning, (b) academic support services that facilitate student-led initiatives for equity and inclusion, and (c) involvement in service-learning pedagogies that provide multiple opportunities to engage with under-resourced communities in efforts to "give-back" and bring new approaches to community problems. Proposal: This presentation proposes a developing model for undergraduate scholarship that is student-led and faculty-guided. This proposed model responds to students' wishes to serve as change agents and social justice advocates in local communities by combining what they experienced in their personal lives with what they learned in college. The model is grounded by evidence from discipline-based service learning and community-based research that suggests a more student-responsive model of learning that supports the expansion of participation of underrepresented undergraduates in creative inquiry. This developing model is based upon (a) two years of conversations with students who completed various community-based service projects, (b) three years of analyzing final reports from 975 total hours of discipline-based service learning in Augmentative and Alternative Communication (AAC), and (c) one retrospective pre-post AAC service-learning course outcomes analysis. This model may feed undergraduates' spark of creative inquiry and holds promise for advancing science in the sub-specialty field of AAC for and with underrepresented populations.

Escalante, Katherine

Institution: *CT - Eastern Connecticut State University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Katherine Escalante

Abstract Name: **The Case for the Prioritization of Highspeed Rails in the United States**

The residents of the wealthiest (and most unwalkable) country in the world are relegated to 3 main modes of transportation: flying, driving, or underfunded public transportation. All modes have become increasingly inefficient and inaccessible in recent years. Projected increases in the US population indicate that we are creating mega-regions that will not prosper unless they can be freed from the stranglehold of highway and airport congestion. At the same time, the United States cannot build enough highway capacity or airport runways to meet demand. Highspeed Rail systems are far more efficient in land use than road and even air.The long list of benefits that come from Highspeed Rails ranges from decreasing our dependence on foreign oil to introducing the world's greenest form of transportation into the US ecosystem. This would transform our transportation to carbon-free which is an urgent task, and the single most important thing we can do to lessen the dangerous effects yet to come from climate change. Our country is in danger with many of our major cities located in low-lying land along our coasts. Most of our transportation and energy systems (powered by fossil fuels) continue to add to the climate problem by cranking out tons of carbon every day, locking in worse climate effects in the coming decades. The time for a Highspeed Rail initiative is no doubt here, we just have to be willing to act.

Escamilla, Faith

Institution: *TX - Texas A&M University - Kingsville*

Discipline: Biology

Author/Contributors:
Faith Escamilla

Abstract Name: **"FGF2 is Required for Early Morphogenesis of Bovine Vascular Endothelial Cells in the Angiogenic Process"**

When an injury occurs, there is a process of healing referred to asangiogenesis. Angiogenesis is comprised of a matrix of complexrebuilding from preexisting cells and contributes to the formation ofvascular endothelial cells (VEC). These cells are a crucial role in theprocess of angiogenesis. The main storage of adipocyte cells can befound in fat tissue which consists of mature adipocytes that aid in the regeneration of cells. In this quantitative study fat tissue from threeBrangus male cattle was collected and the mature adipocytes (MA) werethen isolated from the stromal vascular fraction (SVF)of the tissue. SVFwere cultured for 24hrto promote plate adhesion. MA were added after 24hr withfibroblast growth factor-2 (FGF2) polyclonal antibody (1:50or 1:100 dilution) or without antibody and cultured for an additional 24hr. Blocking endogenous FGF2 reduced (P=0.01) early morphologicalprogression of VEC in the angiogenic process.

Escobar, Pamela

Institution: *TX - The University of Texas at El Paso*

Discipline: Public Health

Author/Contributors:
Pamela Escobar,
Jose Luis Herrera,
Gregory Schober

Abstract Name: **Government Assistance Programs and Health Insurance Coverage in a Predominantly Hispanic Community in the United States**

How do government assistance programs affect the likelihood of having health insurance in the United States? Previous studies demonstrated that Hispanics are less likely to have health insurance than non-Hispanic whites. This study examines the relationship between government assistance programs—including the Supplemental Nutrition Assistance Program (SNAP) and housing and utility assistance programs—and health insurance coverage in a predominantly Hispanic community (El Paso, Texas). Our central argument builds on the policy feedback approach and emphasizes that government assistance programs free up financial resources for the consumption of private health insurance. Using data from an original representative survey and generalized linear models, we will estimate the effects of government assistance programs on possessing health insurance in El Paso. The empirical analysis will reveal the role that policy-based factors play in decisions to obtain (or not obtain) health insurance among Hispanics, and whether government assistance for food and housing propel recipients to acquire private health insurance coverage. The results will have important implications for public policy and public health, given the strong connection between having health insurance and positive health outcomes.

Escorza, Fernanda

Institution: *CA - California State University - San Bernardino*

Discipline: Chemistry/Materials Science

Author/Contributors:
Fernanda Escorza,
Maviz Castro

Abstract Name: **Developing Synthetic Methodology to Optimize a Series of Novel Anti-Malarials**

The human parasite,Plasmodium falciparum, kills nearly 500,000 people a year, with the most fatalities occurring in tropical areas that disproportionately affect sub-Saharan Africa. All clinical symptoms of the disease result from the intraerythrocytic development of parasite. During this part of the life cycle, the parasite expresses an array of proteases (enzymes that degrade other proteins) to carry out many essential processes, such as host cell protein degradation, host cell invasion, and parasite protein export. Previous studies developed a piperazine-based hydroxamic acid scaffold, and we are currently testing a diverse alcohol substituent at the N4 positions. We decided to use an array of alcohols since it is inexpensive, commercially available, and structurally diverse. To achieve this goal, we developed a synthetic methodology that uses shvo's catalyst for amine and alcohol coupling. Throughout the optimization, we determined that temperature, solvent, and equivalence of the alcohol, are factors for a good starting material conversion.

Esimai, Chimdimnma

Institution: *MD - Bowie State University*

Discipline: FAN Abstract

Author/Contributors:
Abby Hemmerich *David Durkin* *Nicole Depowski*
Brian Wallace *Chimdimnma Esimai* *George Ude*
Darion A. Isom

Abstract Name: **Panel discussion: Creating a developmental curriculum to build research skills**

In this panel discussion, moderated by Abby Hemmerich, four panel members will share examples of undergraduate research embedded across the curriculum and within individual courses. These examples will highlight principles of research woven through progressive courses in chemistry, psychology, kinesiology, and natural sciences, helping students build skills developmentally from their first year to graduation.David Durkin (co-author, Darion Isom) will discuss a series of integrated labs to grow research skills throughout the middle years of the chemistry major, culminating in an independent, problem-based learning project. Details about the final “Special Project” will be presented; this project requires students to utilize all of their skills to independently design the experiment, request materials, perform of the experiment, and write the research report.Nicole Depowski will present a case study of a psychology program with research introduced at the introductory level, integrated practice across the curriculum, and a capstone senior thesis project. Early exposure to scholarship focuses on locating and reading research, while students gain skills in research ethics and design at the next level. The third year requires use of primary sources, with synthesis and analysis, culminating in a senior thesis project in which students produce their own research.Brian Wallace will discuss the process for building evidence-based practice and research principles into the kinesiology curriculum to prepare students for graduate school or health and fitness professions. Changes to student engagement in research and outcomes related to faculty-mentored research will be discussed.Chimdimnma Esimai (co-author,George Ude) will present a series of course-based research experiences that engage a whole class of students in a research question or problem. Although individual projects are restricted to a single course, students experience multiple opportunities for these projects across the curriculum, providing complementary content and developmental progression in skills.

Espinoza, Alexandria

Institution: *WI - Northland College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Elysabeth Lough *Ashley Lopez* *Alexandria Espinoza*
Danielle Sneyd

Abstract Name: **The Influence of Prior Exposure to Weapons on the Weapon Focus Effect**

The proposed study aims to further investigate if ownership of firearms decreases the weapon focus effect (WFE). When a weapon is present during the commission of a crime a witness is less likely to accurately remember details, specifically peripheral details, about the perpetrator’s appearance compared to when no weapon is present. It is hypothesized that having prior experience with weapons, through ownership, decreases the WFE compared to no prior experience with weapons.The proposed study will be a 2(Gun Familiarity: gun ownership vs. no ownership) x 2(Weapon Presence: present vs. absent) between subject's design. Participants will come to a lab in groups of 1-10. After receiving and signing an informed consent, participants will watch one of the two mock crime videos that are approximately 42 seconds in length. Both videos depict a mock robbery in the woods where a young woman carrying a backpack is approached by a man who robs her. The robber either only uses his words while holding a backpack to demand her belongings (weapon absent condition) or holds a rifle to demand her belongings (weapon present condition). After watching the mock crime, participants complete filler activities for 20 minutes. Then, participants complete a survey about what they remember about the perpetrators' appearance, select from a 6-person target-present line-up, rate their confidence for the selection, and complete demographic information. Students will be thanked for participating and community members will receive $10.00.The accuracy of participants descriptions will be calculated (total correct details/(total correct + incorrect details)).A series of 2X2 factorial ANOVAs will be used to see if Weapon Presence and Gun Familiarity affected the accuracy, the number of correct details, and the number of incorrect details reported. We expect that those who own firearms will have higher accuracy compared to those who do not own

Espinoza, Nicole

Institution: *MN - Hamline University*

Discipline: **International Studies**

Author/Contributors:
Nicole Espinoza

Abstract Name: **The United Kingdom- A Future AI SuperPower's Effort to Mitigate Algorithmic Bias**

This research investigated the United Kingdom's role in addressing algorithmic bias. This type of bias is rampant in many different types of technology that the public uses, ranging from shadowbanning on social media platforms to facial recognition technology misidentifying non-white faces in public spaces. During the summer of 2022, data regarding algorithmic bias legislation, public opinion concerning legislation, and the history of algorithmic bias was collected from British government websites, articles, and three U.K.-based workshops focusing on artificial intelligence ethics and machine learning algorithms. With the data provided, a qualitative analysis was conducted on the legislative efforts made to contain algorithmic bias. Results showed that while the U.K. is making efforts toward countering bias, like implementing laws such as the General Data Protection Act of 2018 and the proposed Artificial Intelligence Act of 2021, current policies continue to be vague and difficult to understand. Significant revision to policies that address algorithmic bias is needed in order to prevent ethics washing and promote a more equitable outcome for all. This thesis concludes with recommendations of my own and from the Ada Lovelace Institute, a research institution based in the UK, to make practical use of algorithmic bias legislation.

Espitia Pierluissi, Sibonelly

Institution: *CO - University of Colorado at Boulder*

Discipline: **Sociology**

Author/Contributors:
Sibonelly Espitia Pierluissi

Abstract Name: **Child Maltreatment and Adolescent Outcomes: Analyzing the Effects of Control and Learning Theory Variables as Mediators**

A number of studies have identified a strong relationship between a history of child maltreatment and later negative life outcomes, such as engaging in crime and delinquency. This study explores two potential mediating mechanisms from opposing criminological theories to promote our understanding of how this relationship unfolds. Social Bond Theory (Hirschi 1969) suggests that parental abuse and neglect results in weakened parental attachment, proposing that the weakening of an adolescent's social bonds removes constraints and allows the adolescent to engage in deviant acts. Differential Association Theory, on the other hand, suggests that early life experiences can influence individuals' self-selection into deviant peer groups and this, in turn, results in increased levels of crime and deviance (Sutherland 1947).Differences among adolescent outcomes are measured by self-reported delinquency, while using a binary measure of child maltreatment as the predictor. The effects of each mediator are analyzed using data from the "Adolescent Outcome of Physically Abused Schoolchildren'' study (N = 153) and the Pathways to Desistance Study (N = 1354). Preliminary results from a Poisson Model revealed that the relationship between child maltreatment and adolescent deviance is partially mediated by both intervening variables. Decomposition results suggested that the mediating effect of parental attachment was larger than that of peer delinquency.

Esquivel, Geraldine

Institution: *TX - Lone Star College*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Geraldine Esquivel

Abstract Name: **I Am My Own: A Cross-Cultural Examination of Contradiction and Personal Identity**

The philosophical question of personhood seeks to define the essence of a person, and its potential answers have been explored by Eastern and Western traditions alike. However, the notions from the East and West oppose each other, revealing significant differences in their respective logic systems. Western logic excludes truths found in Eastern philosophy, creating a cross-cultural tension. This research argues that dialetheism, the view that there exist some true contradictions, proves more effective than classical logic in determining truth, thus presenting a solution to this cross-cultural tension. Firstly, the study presents an overview of the history of personhood, referencing Western philosophers, such as Socrates, Descartes, and Leibniz, and Eastern religious thought, including Buddhism and Taoism. Each region's claim is then translated into formal logic and viewed through the lens of classical logic, the logic system originating in the West. Classical logic utilizes the Law of Noncontradiction (LNC) which rejects all contradictions, yet Eastern perspectives actively employ contradictions, highlighting classical logic's inability to handle Eastern philosophy. From this point, this analysis argues in favor of dialetheism as an alternative logic system because of its ability to accept some true contradictions, and therefore, Eastern logic. The argument addresses common criticisms of dialetheism, analyzes formal logic within the personhood argument, and emphasizes the importance of context in truth. The research concludes by articulating the need for an inclusive standard of truth, which dialetheism upholds. Through the application of the personhood argument, this analysis asserts that both Eastern and Western schools of thought prove valuable.

Esteban, Erica Therese

Institution: *CA - California State University - Fullerton*

Discipline: Chemistry/Materials Science

Author/Contributors:
Erica Therese Esteban,
Joya Cooley

Abstract Name: **Analysis of Cu2xZnxP2O7 towards Negative Thermal Expansion**

A variety of materials seen in ordinary life scenarios display the unusual behavior of negative thermal expansion (NTE), which is the counterintuitive physical phenomenon in which a material decreases in volume as heat is applied. Materials that exhibit NTE can act as thermal compensators when added to conventional positive thermal expansion (PTE) materials. This can allow for control of a material's size as temperature is varied, and can be advantageous for various fields trying to overcome the problems associated with PTE materials. Investigating the contributing chemical and structural factors that influence NTE in various structures will play a role in developing design principles that can be applied in rational design. These developed design principles may provide the ability to obtain desired thermal expansion properties like positive, negative, or zero thermal expansion in certain materials. Solid-state synthesis and structural characterization of the solid solution Cu2−xZnxP2O7 with varying x values is carried out to understand the effects compositional tuning and slightly positive chemical pressure have on thermal expansion. The results of the synthetic optimization of Cu2−xZnxP2O7 from $0 \leq x \leq 1.5$, its X-ray diffraction data, and Rietveld refinements will be presented to highlight the changes seen as the x value is varied.

Estrada, Natalia

Institution: ***TX - The University of Texas at San Antonio***

Discipline: Biology

Author/Contributors:
Natalia Estrada,
Lilliana Radoshevich

Abstract Name: Examination of Listeria monocytogenes Protein p60 for Deubiquitination Activity

Listeria monocytogenes is a Gram-positive bacteria that causes the foodborne illness listeriosis. L. monocytogenes infection in mouse liver cells has been observed to lead to a decrease in ubiquitination sites. To determine if L. monocytogenes expresses secreted effectors responsible for this effect on host cells, previous work in the laboratory sought potential deubiquitinating enzymes and identified the protein p60 as a putative deubiquitinating enzyme. Deubiquitinating enzymes (DUB) remove ubiquitin from host and bacterial proteins to evade the host immune response. In order to assess whether p60 demonstrates DUB activity, we purified p60 and examined its DUB activity using a ubiquitin protein engineered with a tag that would fluoresce after being cleaved by a DUB. Our assay was performed at 25°C; 37°C at high (10μM) and low(0.1μM) p60 concentrations. We found that regardless of the assay conditions, p60 did not display DUB activity, in contrast to our positive control. Taken together, our study suggests that p60 either does not have DUB activity, that it could have weak DUB activity that was not detectable in this assay or could require a cofactor in order to cleave ubiquitination sites.

Eswaran, Aksithi

Institution: ***CA - Aspiring Scholars Directed Research Program***

Discipline: Biology

Author/Contributors:
Ojasvi Mudda,
Aksithi Eswaran

Abstract Name: In-silico Characterization of Potential SRF Inhibitors in HCT116 Colorectal Cancer

SRF (Serum Response Factor) is a transcription factor that is activated by growth factor stimulation and mitosis, leading to the expression of genes that influence growth and the cytoskeleton. Additionally, HOPX, which is associated with reduced cell proliferation and tumor suppression, inhibits the binding of SRF to DNA. Additionally, SRF in gastric cancer is associated with an aggressive phenotype and a poor outcome due to the downregulation of E-cadherin which promotes the epithelial-mesenchymal transition. Furthermore, in colorectal cancer, SRF is overexpressed in metastatic tissues, leading to increased cell motility and invasiveness. Based on this, we decided to look for potential SRF inhibitors. We are currently working with chemical similarity algorithms and clustering techniques, like Tanimoto similarity and UMAP, to determine SRF inhibitor candidates based on limited existing inhibitors. Those candidates will then be docked to the target using Autodock Vina. Molecules with high binding affinities will be tested for drug-induced liver injury (DILI) and toxicity in cells (DeepCDR). Furthermore AutoGrow, an open-source program which uses a genetic algorithm to 'evolve' known ligands based on binding affinity to the target, will be used for de-novo drug design. Preliminary results reveal several inhibitors with better binding affinities than our positive controls from the ChemBL dataset along with preliminary drugs from Autogrow with even better binding affinities. We anticipate that these drugs will eventually be tested in-vitro on colorectal cancer cell models, such as the HCT116 cancer cell line.

Etten, Emma

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Ali Thome-Hough *Emma Etten* *Michelle DeBoer*

Abstract Name: A comparison of high- and low-powered pulsed electromagnetic field therapy (PEMF) equipment on mechanical nociceptive thresholds and behavior in horses

Evaluating components of stress or discomfort is an important step when working with new modalities of therapy equipment involving animals, in this instance horses. This ongoing study will be using behavioral and factors involving mechanical nociception to evaluate and compare both pulsed Electromagnetic Fields Therapy (PEMF) and Bio-Electro-Magnetic Energy Regulation (BEMER) therapeutic modalities. Eight horses over a period of eight weeks will be used in the University of Wisconsin River Falls equine herd that have never been exposed to either stimulus before. Intensity of stimulus will be dependent on each horse's individual needs. Prior to the initiation of treatments, a baseline mechanical nociceptive threshold (MNT) will be taken along 8 locations of the dorsal aspect of the thoracolumbar region. Pressure will be applied using an algometer until an avoidance response is observed, this could include moving away from the applied pressure, skin twitching, or localized muscle fasciculations. Horses will be randomly assigned to a treatment order. Magna wave will be applied every other day for 30-minute sessions on the front, middle, and hind region of the horse for 10-minutes in each section. BEMER will be applied twice daily for 3 consecutive days. On the first day the application will last 5-minutes for both sessions, the second day both applications will last 10-minutes, and on the final day applications will last for 15-minutes. During each treatment session, behaviors will be documented including licking and chewing, sighing, yawning, lowering of the head, decrease in locomotion, and a decrease in pawing. Following the last treatment session a post MNT will be taken using the procedure described above. After data has been collected for the first 4 weeks, horses will be switched to the opposite treatment. All data will be analyzed via a crossover study where statistics will be run at 0.05.

Evans, Treasure

Institution: *GA - Kennesaw State University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Treasure Evans *Emelyn Martinez* *Alexa Brown*
Ayanna Butler *Quinn Mckeever*

Abstract Name: Spirituality as a Buffer Between Traumatic Experience and Posttraumatic Stress

According to the American Psychiatric Association, trauma can be defined as exposure to actual or threatened death, serious injury, or sexual violence, involving direct exposure, etc. As a result of experiencing trauma or a traumatic event, it can lead to symptoms consistent with a formal diagnosis of PTSD. PTSD can then arise from stressful events or situations “of exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone” (WHO, 2016). Anxiety buffer disruption theory (ABDT) suggests that posttraumatic stress disorder (PTSD) is a result of the disruption of one’s anxiety-buffering mechanisms. This disruption can lead to overwhelming emotions, hyperawareness of one’s mortality, and wide-ranging reactions to traumatic events. However, the anxiety-buffer system mitigates the effects of potential terror, promotes posttraumatic growth (PTG), and is comprised of three components: cultural worldviews (e.g., spirituality), self-esteem, and social support. In some cases, depending upon the threshold of the PTSD, traumatic experiences can lead to one experiencing a spiritual awakening. A spiritual awakening is a term given to describe a subjective experience in which an individual’s ego transcends their ordinary, finite sense of self to encompass a wider, infinite sense of truth or reality (James, 1902/1985). Moreso, it has been seen recently within research that although trauma has been experienced there is still a relatively low prevalence of PTSD in some due to “natural resilience”, often related to a survivor’s spiritual resources (Feurerstein, 1989; McClintock et al., 2016). A sample of N=300 individuals with above-threshold PTSD symptomology (PCL-5 scores 34) will be recruited via a research panel to examine the relationship between spirituality, PTSD symptoms, and posttraumatic growth. Thus, we expect that individuals who have experienced a traumatic event and who report higher spirituality will report lower PTSD symptoms and exhibit higher posttraumatic growth.

Faddis, Ryan

Institution: *GA - Kennesaw State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Ryan Faddis,
Josefa Wulf,
Grace Kurniawan

Abstract Name: **Development of Antiviral Peptides as Therapeutic Leads Targeting the Spike Protein of SARS-CoV-2**

Despite widely available vaccines, the potentially fatal disease Covid-19 remains pervasive throughout the world. Moreover, emerging variants of the virus can evade acquired immunity, leading to a persistent healthcare crisis. While some medications have received emergency approval, small molecule drugs have low target specificity and potentially high toxicity. Large biomolecules are designed to overcome these challenges as they are highly target-specific and show less toxicity. Because of this, peptide therapeutics are gaining increasing popularity as they are easy to synthesis, highly selective, and have fewer side effects. The causative agent of Covid-19 is SARS-CoV-2 which is a positive-sense single stranded RNA (ssRNA) virus. This virus translates four structural and many non-structural proteins. One of the most important structural proteins is the spike (S) protein which allows the virus to attach itself to the host cell surface by interacting with human angiotensin-converting enzyme-2 (hACE2). Recently, our group computationally screened over 700 antiviral peptides, that were known to work against SARS-CoV-1 and other viruses, targeting the spike protein. Several candidate peptides were chosen from the computational screening. These peptides were synthesized using standard Fmoc-based synthesis protocol, characterized by mass spectrometry, and assessed in a competitive ELISA to determine effectiveness at disrupting the formation of the Spike-ACE2 complex in-vitro. Peptides AH33, AVP1701, P1, and P2 had their inhibitory effectiveness determined to be 40%, 13%, 8%, and 8% respectively at 100μM. AH33 was the strongest lead peptide due to it achieving an inhibitory effectiveness of 30% at 20μM. These results suggest that further development of peptide-based antivirals targeting the spike protein of SARS-CoV-2 could yield effective therapies for Covid-19 treatment.

Fahy, David

Institution: *GA - Georgia College and State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Trenholm Fahy *Joseph Pabian* *Elizabeth Schultz*

Abstract Name: **A Pilot Study Investigating Veteran Identity Using the Photovoice Technique in a Qualitative, Community-Based Participatory Action Research Framework**

Veteran identity has been defined as a Veteran's self-concept that derives from their military experience within a sociohistorical context. Reintegration into civilian life can be difficult, experiencing a "reverse culture shock" that can negatively impact many interpersonal relationships and result in experiencing negative feelings such as helplessness, isolation, and emotional disconnection. Understanding how Veterans define themselves in their civilian lives can give us insight that could bridge the gaps between them and their available support systems. We utilized a qualitative, community-based participatory action research (CbPAR) model where Veterans are empowered to use their voices to tell their stories and researchers serve to help communicate their stories to the community. We are using the photovoice technique where Veterans take pictures that represent the answer to the following prompt: What does being a Veteran mean to you? This study is part of a larger project using photovoice and lyric analysis to help define the "sights and sounds" of Veteran identity. Our Veterans will then be interviewed individually where they are asked questions to help the researchers understand the symbolism of the images relating to the prompt for them. Transcripts of the interviews are being analyzed to uncover common themes and elements that represent a definition of Veteran identity. Preliminary results of these analyses will be discussed after completion of our member-checking process, which helps establish external validity within the community. Our next aim is to present the images and our results in an immersive, interactive gallery experience to allow for the Veterans' stories to be told. We argue that without more emphasis on qualitative, CbPAR methodologies, research with special and/or marginalized populations, like Veterans, will continue to be more exploitative than beneficial and will further reinforce the distrust in scientists and clinicians already experienced by many in these populations.

Fair, Aiden

Institution: *TX - San Jacinto College*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Joshua Tickell,
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Antonio Gutierrez,
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Sujan Neupane,
Madhu Gyawali,
Marissa Goncalves,
Rudra Aryal,
Lok Lamsal

Abstract Name: **TRENDS AND VARIATIONS OF NO2 POLLUTION (2005-2019) OVER TEXAS: VIEW FROM THE GROUND AND SATELLITE**

Nitrogen oxide (NOx = NO + NO2) is a widely occurring air pollutant that impacts atmospheric chemistry and human health. NOx is formed from various sources, such as lightning, vehicle emissions, and various geological activities. In this study, we present the NO2 variations and trends from 2005 to 2019 over Texas using measurements from an Ozone Measuring Instrument (OMI) abroad, the NASA Aura satellite, and compare with in situ surface NO2 measurements from US Environmental Protection Agency (EPA) Air Quality System (AQS) network. Both OMI and AQS datasets display distinct emission reduction rates from 2005-to 2020, including the COVID-19 lockdown.

Farag, Sally

Institution: *VA - George Mason University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sally Farag

Abstract Name: **Real-Time Shape-Changing DNA Origami**

DNA origami is the art of folding DNA molecules into prescribed nanostructures that may be used as nanocarriers for various applications such as drug and vaccine delivery. These DNA origami structures are assembled with two different types of DNA strands: one long single-stranded DNA scaffold strand, and several short oligonucleotides, called the staple strands. While there have been many advancements in this field, with notably the synthesis of actuatable nanoparticles, little is known on how to design shape-changing DNA origami. This type of structure could be used to trigger specific biological mechanisms by releasing or presenting biomolecules upon specific stimuli such as pH, biomolecules (e.g., RNA or cytokines), or temperature. This research focused on applying DNA origami design concepts to construct multiple DNA nanoparticles with the same single-stranded scaffold strand. These nanoparticles would only have a few variations in the staple strands used to allow quick shape changing by replacing only a few strands. Complex structures of DNA nanoparticles can be assembled with multiple smaller origami structures that act as building-blocks pieced together and can be reorganized to provide fast shape-changes. As such, before designing the final nanoparticle structures in TIAMAT, a tetrahedron was designed to serve as their building-block, allowing for a more cohesive build and transition between each nanoparticle. Through this method, two different nanoparticle structures were designed, each containing three of the tetrahedron structures: a triangular structure and a crescent structure. Both were made using the same 1,632 nucleotides scaffold strand, demonstrating that designing multiple structures from the same strand is possible. This allows for a better understanding towards the development of real-time shape-changing DNA origami, and the designed structures will be folded to observe their ability to transform from one shape to the next, using strand displacement as proof of principle for the occurrence of shape-changes.

Farhad, Drukhshan

Institution: *VT - Norwich University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Drukhshan Farhad

Abstract Name: **Representation of Afghan Women in Western Media**

My journey for this research project started within a Literary Method class in the Fall of 2021 as I watched Chimamanda Ngozi Adichie's ted talk on "The danger of a single story" for the first time. Listening to her speech and hearing how she was personally affected by the projection of "different variations of a single story" in western literature and mainstream media about Africa and how it had limited the understanding and imagination of the people she interacted with when she came to the US as a college student, was an eye-opening moment for me to understand some of the interactions in the American society. The repetitive line of questioning about Afghanistan's Security, the Taliban, and my English Proficiency are a few of the many examples that signify the existence of a single story for an Afghan woman. In the last two decades, after 9/11 and with the United States' involvement in Afghanistan, the western media has been active in showcasing stories about Afghanistan, especially the ups and downs of life for Afghan Women. The United States government used the restoration of Afghan women's freedom and rights as part of its rhetoric to justify invading Afghanistan and overthrowing the Taliban's government at the time. From the cover of National Geographic highlighting Afghan women wearing a Blue Burqa showcasing the restrictions on "The Right to Fashion in the age of terrorism" to the front cover of Times magazine with an Afghan women's mutilated face, are variations of a single story that depict the challenges of women in that part of the world yet limit the understanding of Afghan women to just their challenges. In this research, I will focus on exploring variations of a single story in the case of Afghan women and ways in which it can be dangerous.

Faria, Diego

Institution: *FL - Miami Dade College*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Diego Faria

Abstract Name: **A mathematical perspective of Utilitarianism with emphasis on the ethic of social media**

This research focuses on a discussion of Utilitarianism from a mathematical perspective. The language and rigor of mathematics are used to create a representation of the essential aspects of this philosophical doctrine which, in the own words of its most important proponents, Bentham and Mill, states that societies ought to cause "the greatest amount of good for the greatest number." The purpose of this study is to develop an axiomatic framework for a more accurate treatment (from the perspective, language, and rigor of mathematics) of these topics. In spirit, the independent contributions of Hutcheson and Bentham are the most significant influences of this work, as the former proposed some mathematical algorithms intended to quantify the morality of actions, thus establishing the fundamental basis for the hedonic calculus of the latter. The ideas of ethic philosophers like John Gay, David Hume, and William Paley, have as well been valuable influences in our study. We pursue to expound on a system of measures that serves to gauge the overall happiness of a society, according to the definition of happiness given, which, particularly, prepares the ground for making comparisons among certain societies at specific instances of time. Additionally, because social media constitutes a significant part of modern life, we will exemplify our notions relevant to utilitarianism through the domain of social media. Especially, we consider Facebook as a society (according to our definition) and evaluate the implications, under the utilitarian lens, thatthis virtual network with its rules, tendencies, and interactions have for the rest of the world.

Farmer, Avery

Institution: *WI - Marquette University*

Discipline: History

Author/Contributors:
Avery Farmer

Abstract Name: **Political Alignment and Activism of Free Black Men in Post-Revolutionary New York (1790-1830)**

The American Revolution turned a colony into an experimental sovereign nation with new ideals inspired by Lockean philosophy, the chief amongst them being freedom. Paradoxically not all Americans were free, black peoples in America posed an interesting question as to how this new form of democracy and rights laid out by the Constitution would apply. Northern states beginning in 1780 began to emancipate slaves, unsure what their role in the American political life would be. However, New York which grew to become the largest urban mecca in the United States was reluctant to emancipate slaves while hosting some of the largest freemen communities. The period known as the Early American Republic between 1790 and 1830, for this paper's purposes, in New York was a microcosm for how freemen fit into the American equation of citizenship and political power. Uncovering the stories of freemen in New York during this time and their role in creating progress towards equality is a key tool in understanding the American identity.

Farnsworth, Misia

Institution: *UT - Weber State University*

Discipline: Nursing/Health Science

Author/Contributors:
Misia Farnsworth *McLayne Arnold* *Ben Laughter* *Cameron Clark*

Abstract Name: **Viability of Trypanosoma cruzi in RBCs at cold storage temperatures**

Chagas disease (American Trypanosomiasis) is caused by the protozoa Trypanosma cruzi. Chagas disease affects approximately 10 million people in Latin America, manifesting in pyrexia, malaise, splenomegaly, and cardiomyopathies. T. cruzi is commonly spread through the infected feces of the 'kissing' bug. After insect bites, blood transfusion is the second most frequent mode of transmission. The Center of Disease Control (CDC) estimates in the US, around 300,000 individuals are infected with T. cruzi, causing a considerable disease burden. The goal of this research will be to study the viability of T. cruzi in packed red cell aliquots stored at various cold temperatures to study parasitemia. If successful, storage of packed red cells in cold temperatures will show reduced viability of infectious T. cruzi; creating a simple adjustment to current prevention methodologies furthering the reduction of transfusion-transmitted American trypanosomiasis. Warming temperatures can shift the distribution of triatomine insects, allowing the spread of the disease to non-endemic areas such as the United States as climates become more favorable. Pollution, insecticide resistance, and tourism are additional factors that may contribute to this threat. Means to prevent trypanosomiasis from blood products will become pertinent with this change. Routine screening of blood-donors using a questionnaire has reduced the incidence of contracting trypanosomiasis in non-endemic areas. Serological testing is not mandatory outside endemic areas because it is suspected that the number of T. cruzi-infected donors is small, and screening each donor would not be cost-effective. Although the questionnaire has been effective, it fails to screen asymptomatic carriers resulting in transfusion-transmitted infections.To mimic organ-donor tissue, cultures stored at low temperatures have shown a reduction of trypanosomes. Past research has explored cold storage on the viability of Babesia in blood bags. Minimal research has been conducted on the viability of T. cruzi in blood stored at cold temperatures.

Fate, Bennett

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Bennett Fate

Abstract Name: **Investigating the Effect of Varying Biochars in Controlling Seedling Root Rot in Soybean Plants Inoculated with Pythium sylvaticum.**

Pathogenic fungi and fungal-like organisms can greatly damage soybean yields leading to economic and social consequences. One possible solution is the use of biochar in mitigating the effects of these pathogenic organisms. An important waterborne pathogen to soybeans is Pythium, which causes root rot in young seedlings. We hypothesized that if we vary the types of biochar added to soil infested with Pythium sylvaticum, the soybean plants will have varying degrees of root rot depending on the presence and source of the biochar. Different biochar source materials lead to differing structure, which can change the way water is held in the soil and possibly mitigate the spread of the waterborne P. sylvaticum. Our secondary hypothesis is that the biochar with higher volumetric water content will have more severe root rot. We will test four different biochars from different sources. Each biochar will be added to pasteurizedsoil and soybean plants will be grown, in cups, in these amended soils. For each of the four biochars, there will be 10 replicate soybean plants inoculated with P. sylvaticum and 10 plants without P. sylvaticum. There will also be a control group in which there will be no biochar added with 10 replicate soybean plants inoculated with the P. sylvaticum and 10 with no pathogen present. We will use soil moisture probes to measure volumetric water content. Approximately threeweeks after emergence, the seedlings will be removed, roots will be washed, and we will record % root rot, root length, root dry weight, and shoot dry weight. After obtaining the data, it will be analyzed through SAS to look for statistically significant relationships between biochar, soil moisture, and seedling root rot. This research offers a potential alternative to fungicide to enhance agricultural productivity.

Fathala, Sara

Institution: *OH - Capital University*

Discipline: Nursing/Health Science

Author/Contributors:
Daryna Zaitseva,
Sara Fathala

Abstract Name: **The Accuracy of Gluten-free Labeling in European and Middle Eastern Food Products Compared to Samples from the United States**

Gluten is a protein complex found in wheat, barley, and rye, and even in foods that do not normally contain these grains. Previous work in this lab has shown that 29.8% of labeled “gluten free” products made in the United States (n = 248) have significant amounts of gluten in them (20 ppm). The current study was designed to investigate the reliability of “gluten-free” food labels in the international consumer marketplace. This research helps to inform and potentially caution those with gluten intolerance, especially with Celiac disease, to avoid gluten cross contamination and be skeptical of the gluten levels in food products advertised as “gluten-free”. A total of 49 samples labeled “gluten-free” were obtained from grocery stores in Europe and the Middle East; samples were manufactured in 18 countries there. A Nima Gluten Sensor (antibody based colorimetric assay) was used to determine if gluten content was <20ppm, the maximum allowed by the European Commission and local Middle Eastern countries, for a product labeled “gluten free”. Of the 49 samples tested, 41 of them were confirmed to be “gluten free” (0 ppm), with only 8 (16.3%) having significant levels of gluten. When European and Middle Eastern samples are compared to those from the US, it appears that the food from these countries are more accurately labeled than in the United States; the percent of samples with measurable gluten is approximately half of that for products produced in the US. While gluten-free labeling can be trusted in most cases, the risk of cross contamination with gluten is still possible and continues to pose some risks to those who are gluten intolerant.

Faught, Roman

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Roman M. Faught,
Mark Gutierrez,
Samantha A. Sunnarborg,
Jeremy T. Derhaag,
Spencer A. Schoeck

Abstract Name: **Radiation dose studies in fruit flies with 350keV electrons**

The effects of beta radiation on fruit flies (Drosophila Melanogaster) were studied using the Applied Nuclear Science lab AN400 accelerator modified for electron acceleration and extraction. Dose-dependent effects up to 800 Gy have been observed, with significant effects well below the LD-50 dose for 2-day old larvae. These effects include reduced larvae and aborted development to adulthood. The goal of establishing a population of viable adults in samples showing clear radiation dose effects to study inherent radiation resistance has now been met. The data gathered in the process of this experiment will be used to further calibrate the accelerator for future research.

Fedele, Aviana

Institution: *FL - University of Central Florida*

Discipline: **Nursing/Health Science**

Author/Contributors:
Aviana Fedele

Abstract Name: **The Effects of Anxiety on Vision Related Performance Among Collegiate Athletes**

Anxiety is an intense feeling of worry or fear and can often be overwhelming, taking over someone's everyday activities. Often times, individuals who have feelings of anxiety or are in stressful situations that are anxiety-inducing, they can get physical symptoms such as increased heart rate, sweating, fatigue and rapid breathing. Anxiety can also affect an individual's quality of vision. In circumstances that are highly stressful, individual's vision can start to diminish temporarily, affecting the peripheral vision as well as making central vision blurry. This study examines the effects of anxiety and vision quality on athletic performance among collegiate athletes. It compares the impact of being in stressful situations among athletes with and without vision disorder during athletic events. By conducting a study focusing on collegiate athletes and non-athletes at the University of Central Florida and comparing their anxiety levels, as well as any changes in their eyesight/perception, we can assess the association between stress and eyesight, and whether this correlation has an impact on their performance. The objective of this study is to assess a potential relationship between athletes' performance, with and without vision-related disorders, during highly stressful situations. 31 participants, both male and female, between the ages of 18-27 participated in this study. Using UCF Qualtrics and incorporating the State-Trait Anxiety Survey into an online modality was sent out to all student athletes. By comparing the data collected in SSPS and One-Way ANOVA, there was no significant data between the variables of what sport they played, the type of refractive errors they have, if they wear corrective lenses, and the anxiety they experience during stressful situation.

Fejzulla, Rei

Institution: *MI - Wayne State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Rei Fejzulla,
Naresh Venneti,
Jennifer Stockdill

Abstract Name: **Synthesis of Lanthanide-Binding Peptides and Cyclical Absorption/Release Strategies**

Lanthanides are metals widely used in the production of technological components. Lanthanides do not occur naturally in the US, and we are dependent on the import of these metals for use in a variety of economically important applications. Meanwhile, disposal of lanthanides represents an environmental concern. We aim to address both concerns by recovery and separation of lanthanides from industrial waste streams. In this poster, we present the synthesis of solid supported lanthanide-binding peptides using solid phase peptide synthesis techniques. We present progress toward establishing their coordination selectivity and efficacy, pH dependent binding, and reusability.

Feldt, Dayton

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Dayton Feldt

Abstract Name: **Skunked.**

Skunked is a story about darts. I started writing the script almost two years now in my script writing class. It was during both the height of the pandemic, and the middle of winter, So I was able to dedicate a lot of time to wriitng this story. It was designed to be the type of project I could realistically shoot once I was finished, or close to finished with college. Alot of me and my colleagues are enraptured with high concept sweeping cinema and we all really want to learn how to produce that kind of stuff. But I wanted to actively seek out a subject matter that could be realistically produced in a college town in north Wisconsin, on a college budget. And that lead me to movies like Better Luck Tomorrow, Lock, Stock and Two Smoking Barrells, and Dodgeball: A True Underdog Story. All these movies are low scale stories without much in way of grandiose spectecale. I wanted to capture the youthful complexity of Better Luck Tomorrow and the special blend of drama and comedy that movie brought. I wanted to aim for the quick wit and sharp direction of a Guy Ritchie move like Lock, Stock. Finally the absurdism of dedicating a feature length movie to a game nobody cares about came from Dodgeball. I was able to experemint with this style and tone last semester with Folded, a spiritual prequel and proof of concept for Skunked chronicalling a poker game. And now I have the oppurtunity to shoot an exert from my script this semester and hope to share it with others. Skunked started as a goofy idea but morphed into a story of freindship, finding confidence, and making your mark before its too late. Hope you all are interested in the final product.

Felemu, Priscilla

Institution: *MN - University of Minnesota - Duluth*

Discipline: Biology

Author/Contributors:
Priscilla Felemu

Abstract Name: **Impact of Sugar Substitutes on the Metabolism of Probiotics**

Non-nutritive sweeteners are commonly used in a variety of food and beverage products. They are primarily used to manage weight loss and diabetes by preserving a sweet taste without increasing calorie intake. While non-nutritive sweeteners are generally thought to be harmless, there is considerable evidence that they contribute to metabolic dysfunction and can impact body weight, glucose tolerance, hunger, and taste sensitivity. We investigated the influence of non-nutritive sweeteners (aspartame, mannitol, saccharine, stevia, and sucralose) on the metabolism and growth rates of Bifidobacteria sp. and Streptococcus stearothermophilus. The two microbes (Bifidobacteria sp. and Streptococcus stearothermophilus) were grown in five different sugar substitutes in a litmus milk medium. The cultures were incubated and checked repeatedly for growth. After 48 hours of incubation, aspartame, stevia, saccharine, and sucralose showed an increase in metabolism and growth. However, in Mannitol, Streptococcus stearothermophilus metabolic activity was similar to the control group when compared to the metabolism and growth of Streptococcus stearothermophilus that was cultured in glucose. In Bifidobacteria sp. cultured in aspartame, saccharin, and stevia showed a decrease in metabolism when compared to Bifidobacteria sp. cultured in glucose after 48 hours of incubation. The metabolism of Bifidobacteria sp. in mannitol was increased after 48 hours of incubation, while sucralose did not affect the Bifidobacteria sp. metabolism. In conclusion, our findings reveal that non-nutritive sweeteners can alter the metabolism of Bifidobacteria sp. and S. stearothermophilus.

Felix, Deidre

Institution: *PA - University of Pittsburgh School of Nursing*

Discipline: Nursing/Health Science

Author/Contributors:
Deidre Felix

Abstract Name: **Risk Factors for Suicidality in Black American Youth: A Narrative Review**

Objective: The purpose of this study was to identify risk factors of suicide ideation and suicidal behavior in black American youth.
Background: Research has shown that school aged and pre-adolescent black youth in America have higher rates of suicide deaths than their white counterparts. It is a leading cause of death in black youth in the 10 to 19 year old age group. Alarmingly, black American youth as young as 5 years old have shown trends of increased suicidality, but the risk factors and the causes driving this trend remain largely unknown.
Methods: The database searched was PubMed. The search terms used were “risk factors” AND “black youth” AND “suicide”. The search yielded a total number of 386 results. Of those, only 30 articles were eligible to be used in this review.
Evaluation: Several risk factors were commonly identified among the studies included in this review. Most of the articles noted an association between poor parent-child relationships or a complete lack of a quality parent-child relationship and increased suicidal ideation and behavior. Socioeconomic disparities, such as access to quality education and safe spaces, as well as historical disparities also played key roles as risk factors for black youth suicide attempts.
Conclusion: More research will need to be done on this topic to determine exactly how we can reverse these rising trends in suicidal ideation and behavior in black youth. However, by addressing and removing disparities, we can create situations of equity, potentially resulting in a downward trend to the disproportionate rates of reported suicidal ideation and attempts for black adolescents in America.

Felix, Olivia

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
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Mitch Comerford,
Karissa Dachel,
Adam LeCleir,
Madison Schultz

Abstract Name: **Political Divide**

The current political climate in the US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Felter, Claire

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Claire Felter,
Abigail Brewer,
Sade Spencer

Abstract Name: **Modeling Cannabinoid Withdrawal With Anxiety and Depression-Related Behaviors in Long Evans Rats**

Cannabinoid withdrawal plays a role in maintaining the use of a drug, thus influencing a substance use disorder (SUD). The symptoms associated with withdrawal in humans, including depression and cravings, interfere with efforts to achieve cessation of drug use. I will characterize the behavioral profile of cannabinoid withdrawal in rats using models that measure multiple endophenotypes of cannabinoid dependence that may contribute to withdrawal and craving. Initial studies will be performed using adult male and female Long Evans rats receiving twice daily infusions of the synthetic cannabinoid agonist WIN55,212-2 or vehicle via jugular catheter starting at 0.2 mg/kg and increasing to 0.8 mg/kg over 4.5 days. This model produces dependence such that somatic signs of spontaneous withdrawal are observed. Here I used open field, marble burying, and elevated plus maze to measure anxiety related behavior and sucrose preference, forced swim, and the social novelty test to evaluate depressive-like behavior following spontaneous withdrawal for 1 or 2 weeks (between-subjects). The open field test and elevated plus maze are measures of exploratory nature. Marble burying measures repetitive and anxiety like behavior. The sucrose preference test is a measure of anhedonia, the forced swim test measures behavioral despair, and the social novelty test measures sociability of a rat. I expect to see an increase in depression and anxiety-like behaviors in rats treated with WIN55,212-2 and spontaneously withdrawn in comparison to the vehicle group. By solidifying the relationship between depression and anxiety and withdrawal from cannabis, I hope to better understand the influence of these symptoms of withdrawal on craving and relapse.

Feng, Joanna

Institution: *CA - California State Polytechnic University - Pomona*

Discipline: Chemistry/Materials Science

Author/Contributors:
Timmy Nguyen *Joanna Feng* *Nathalie Nalbandian* *Thomas Osberger*

Abstract Name: **Synthesis of Substituted Isatins as Potential Antibacterial Agents**

The decline in the development of new antibiotics, combined with their over prescription against bacterial pathogens, has resulted in an increase in the antibiotic resistance cycle and accounts for much of the hospitalized-infection rates. Therefore, this represents an urgent health priority in the synthesis of novel antibiotics. Our research focuses on the expansion of substituted indole-1H-2,3-dione derivatives, most commonly known as isatin. Isatin is a heterocyclic compound with significant synthetic versatility for its highly reactive C-3 carbonyl group and N-1 amino group, whose derivatives can serve as a precursor for potential antibiotics and pharmaceuticals. The unique properties of isatin's structure lend it to perform a broad variety of structural modifications to synthesize structurally diverse derivatives and yield a large spectrum of biological activity that are dependent on the substituent properties. Many of the synthetic routes involve substitutions at positions C-3, C-5, C-7, and N-alkylation reactions. Previous studies have observed the greatest antimicrobial activity when substituting electron-withdrawing groups at the C-3 and C-5 positions due to the increase in the overall lipophilic character to facilitate transport across the hydrophobic membrane. We synthesized a library of substituted isatin derivatives to investigate how substitutions on the C-3 carbonyl and the bromination of the aromatic moiety at the C-5 and C-7 positions can affect the antibacterial properties. These derivatives involve Henry reactions, Grignard reactions, Hydroxyalkylation, and Schiff base formations through modifications on the C-3 carbonyl of isatin, 5-bromoisatin, and 7-bromoisatin. Each compound's identity was verified through NMR to ensure the success of the synthesis. We have successfully synthesized and identified 13 isatin derivatives, with product yields ranging from 51% to 90% yield. The synthesized compound library will be screened against E. colito measure the potential antimicrobial activity.

Ferguson, Carinna

Institution: *WV - West Virginia University*

Discipline: FAN Abstract

Author/Contributors:
Carinna Ferguson *Kevin Walden* *Cinthia Pacheco* *Abhik Roy*

Abstract Name: **Undergraduate Researchers Activities and Autonomy: Strategies for Tracking and Assessing Student Engagement**

Empirical research has outlined the benefits and outcomes associated with engagement in undergraduate research broadly (i.e., student retention and persistence, intention to pursue post-baccalaureate studies, university belongingness). Fewer studies have aimed to understand students' research activities and the degree of student autonomy anticipated with sustained engagement in undergraduate research.
To better understand the research activities of students participating in the Research Apprenticeship Program (RAP), a two-semester multi-disciplinary research experience for underclassmen, biweekly reports were developed to track student engagement and activities. In reports, students provided narratives of their weekly research activities and reflected on beneficial tasks. Initially, biweekly reports served as a useful programmatic tool for administrators to ensure students were regularly participating in research as required by the program. While still a useful programmatic check-in, additional assessment of students' self-reported text data within biweekly reports provided rich descriptions of student activities and learning across time. To understand a) what day-to-day activities students were engaging in and b) how those activities may have changed across the duration of the two-semester program, we utilized a mixed-method approach. Specifically, we applied a topic modeling algorithm (HDBSCAN + tSNE) and conducted qualitative content analysis to understand how student activities and autonomy changed over time. Results from qualitative analysis were used to supplement and inform the output of topic models to provide an overview of student activities across time.
The aim of the current presentation is threefold. First, we will provide an overview of the biweekly reporting system for tracking and assessing undergraduate research participation. Second, based on the results of our mixed method analysis, we will report activities students engaged in and how they shifted across time. Third, we will outline resources and approaches that may be utilized for assessing text-based data at other institutions.

Fernandez, Diego

Institution: *OK - The University of Tulsa*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Diego Fernandez,
Syed Hussaini

Abstract Name: **SYNTHESIS AND ISOLATION OF CANNABINOIDS**

The Cannabis plant produces a variety of molecules that interact with the human endocannabinoid system. These molecules, named cannabinoids, are drugs with many benefits ranging from pain relief to appetite stimulation. The most popular cannabinoids currently used for medicinal and recreational purposes are Δ9-tetrahydrocannabinol (Δ9-THC) and cannabidiol (CBD). These two substances are the primary cannabinoids found within the cannabis plant, but there are many more cannabinoids that can provide possible therapeutic benefits that occur in minor quantities. One of these cannabinoids, cannabinol (CBN), has promising potential as a sleep aid. Our project aims to find a unique method for creating synthetic CBN from CBD in high yield and isolation efficiency. If such a method could be derived, it could be applied to industrial settings, specifically within the hemp industry, to provide more CBN of higher quality to the general market at lower costs. Our project will compare existing synthetic routes to CBN to our own. Our synthetic route begins with CBD as it's readily available in large quantities within the hemp plant. We then use existing methods of converting CBD into Δ8-THC at a high yield. After this intermediate step, the Δ8-THC is finally converted into CBN. The last step requires a workup and efficient isolation of our product.The current isolation method used is column chromatography, but we intend on experimenting with thermomorphic systems to improve efficiency.

Ferns, Jamie

Institution: *CA - California State University - Channel Islands*

Discipline: **Biology**

Author/Contributors:
Delyar Khosroabadi *Jamie Ferns* *Lendin Stell Santiago,*
Skylar LaBrie *Leighton Ledesma* *Gareth P. Harris*

Abstract Name: **Characterization of novel genes that mediate serotonin-dependent effects on behavior**

Brain-targeting drugs and their actions have been an intensive area of research as potential therapeutics for neurological disorders. Despite the use of an array of pharmacological therapeutics for targeting neurological mechanisms associated with depression, understanding of the mechanisms underlying these processes and the exact targets of each drug is still not fully understood. More recently, there has been a focus on understanding novel mechanisms that mediate modulatory effects from key biogenic amines including serotonin, neuropeptides and electrical junctions in mood, emotion and reward. We are currently investigating the effects of serotonin on intracellular pathways and sensori-motor networks. We use Caenorhabditis elegans, to investigate the effects of serotonin on key worm behaviors utilizing genetic mutants that lack gene families encoding neurotransmitters, neuropeptides, intracellular signaling and electrical junctions for possible roles in serotonin effects on worm egg laying and movement. Many C. elegans genes share significant conservation with humans, which provides a potential avenue to identify the effects of human targeting compounds that are still not fully understood. We have begun to characterize the role of novel intracellular neuronal signals, synaptic and non-synaptic information flow that is required for serotonin-dependent stimulation of egg laying and inhibition of movement. We have identified multiple neural signaling molecules that mediate the serotonin-dependent effects, synaptic transmission and select neurotransmitter genes, neurosecretory signal encoding genes, and, heterotrimeric G-protein signaling mechanisms that are required or interact with serotonin-dependent effects on egg laying and movement. We propose using C. elegans as a platform for continued study of serotonin mechanisms.

Ferrie, Brooklyn

Institution: *IA - Wartburg College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Brooklyn Ferrie

Abstract Name: **Adjustment to College: The Role of Parental Reciprocity and Gender**

Purpose: The role of parental reciprocity on college adjustment was examined. Parent-adolescent reciprocity promotes attachment (Bowlby, 1980) and enhances college adjustment (Agliata; Renk, 2008). Males report better adjustment than females (Enochs et al., 2006). Based on past research it is hypothesized that better adjustment will be reported by those high on parental reciprocity and by males.Procedure: First-year undergraduate students (18 males, 27 females) completed the Perception of Parental Reciprocity Scale (Wintre et al., 1995) and the College Adjustment Scale (Anton; Reed, 1991).Results: 2 x 2 ANOVA procedures were performed with gender and high/low reciprocity as the independent variables and the nine adjustment scales as the dependent variables. Low scale scores indicate better adjustment. High reciprocity resulted in better adjustment onthe depression scale (M=16.76, SD=2.08) than did low reciprocity (M=23.29, SD=6.03), F (1, 33) = 2.92, p = .048. Similar findings were obtained for suicidal ideation. No effect of gender was obtained. Gender and parental reciprocity interaction on anxiety was significant, F (1, 32) = 3.22, p = .04. Among females, high reciprocity resulted in better adjustment. Conclusions and implications: High reciprocity resulted in better adjustment on depression. The study hypothesis and findings of Agliata; Renk (2008) were supported. The hypothesis and past research (Enochs et al., 2006) for gender was not supported. Regarding interaction effects, high reciprocity resulted in better adjustment on anxiety among females. Findings suggest that parental reciprocity results in better adjustment regardless of gender on certain subscales and helps female college students adjust to college on others. Educating parents on the importance of reciprocal and quality communication with their children helps them become more independent in the transition. Future research should examine the role of family structures in the parental reciprocity-adjustment relationship.

Fetting, Rebekah

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassandra Giwojna,
Rebekah Fetting

Abstract Name: **Animals' Impact on Stress**

The majority of today's students are stressed in some way, and research suggests that animals are a good way to manage stress levels. With anxiety and depression on the rise, programs are seeking support for students in the stress-filled school life. Some researchers have found that bringing in therapy animals has been a good way to lift the spirits of the students. Animals have been used in therapy as early as the 18th century (Chu et al., 2009) and have been shown to ease isolation. Over 98% of full-time students are stressed, and 86% of students find improvement in domestic animals. Animal-assisted programs are still being researched, but evidence shows that there is a positive influence towards stress in many students. This research attempts to disclose the relationship between pet interaction and the level of stress the person feels. The results show that a majority of students have reduced stress after interacting with a domestic animal.

Feuker, Katie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jocelyn Stepanek *Leah Rook* *Zach Caterer*
Katie Feuker *Michael Walsh*

Abstract Name: **Identification of Biomarkers For Nonalcoholic Steatohepatitis Diagnosis Using Fourier Transform Infrared Spectroscopy**

Nonalcoholic steatohepatitis (NASH) is a progressive type of nonalcoholic fatty liver disease (NAFLD) characterized by hepatocyte inflammation and ballooning, as well as fibrosis. Common symptoms include fatigue or vague abdominal pain, however for many the disease may progress asymptomatically. Complications of NASH can lead to cirrhosis, end stage liver disease, and liver transplant. Currently, NASH is diagnosed through a liver biopsy, which then undergoes hematoxylin and eosin staining before being examined by a pathologist for diagnosis and staging. Diagnostic criteria includes the presence of hepatic steatosis (>5%), hepatocyte ballooning degeneration, and hepatic lobular inflammation. Additionally, alcohol consumption is considered to differentiate the diagnosis from alcoholic steatohepatitis. This method is limited by pathologist experience, which can result in later diagnosis andlead to discrepancies in interpretations of samples. Infrared spectroscopic imaging (IR) has been shown to rapidly image human tissue biopsies and to identify biochemical signatures that are associated with disease diagnosis and outcome in a label free manner. IR presents a possible new diagnostic approach that is more standardized since it does not rely on staining or a pathologist interpretation of the stain which can lead to errors and discrepancies. In this study we applied Fourier Transform Infrared (FTIR) Spectroscopy Imaging to biopsies from patients previously diagnosed with NASH, and to liver resections of patients without NASH, in order to identify biomarkers expressed in NASH. Using FTIR we were able to determine different stages of fibrosis based upon the spectroscopic signature using multivariate data analysis. With this information we hope to explore and better develop FTIR as a diagnostic method for other diseases that have similar complications with traditional diagnostic methods.

Fewell, Connor

Institution: *AR - John Brown University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Connor Fewell

Abstract Name: **Physiology and Training for Single-Day Ultramarathons**

In the form of a detailed and highly annotated training document, which the author completed in his preparations to run a 100-kilometer race, as well as a thoughtful explanation of its background training principles based in human physiology, this project attempts to find the most efficient and effective strategies leading to success in this grueling distance. It includes specific and detailed workouts acting as examples of the different training practices and theories proven to work best for the experienced endurance runner, as well as having clear explanations as to why those workouts were performed and their greater role in the training process. The paper also defines several relevant physiological adaptations of the Cardiovascular, Musculoskeletal, and Nervous systems that serve as more specific goals of training. All methods of exercise are succinctly noted, defined, and put in their larger contexts. In general, the types of exercises performed consist of slower runs designed to build and maintain the cardiovascular engine, a variety of faster runs to increase oxygen consumption and vVO2max, and strength building exercises meant to develop and enhance muscular endurance. Each workout has its own specific purpose, and the subject in this self-case study attempted to perform them as closely as possible to what has been prescribed as to render the best conclusions. As a whole, this project aims to serve as an anecdotal and clinical standard for other experienced athletes wishing to run an ultramarathon lasting roughly 8-15 hours, as well as a thoughtful application of scientific research.

Fichtner, Greg

Institution: *OH - Miami University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Angelina Fichtner,
Rose Ward

Abstract Name: **The Relation Between Sensory Input and Alcohol Drinking Patterns in College Students**

According to a national survey, almost 53% of full-time college students ages 18 to 22 drank alcohol in the past month and about 33% engaged in binge drinking during that same time frame. Unhealthy drinking habits are on a rise and despite the efforts implemented by schools, just under 2,000 college students die a year from unintentional alcohol-related injuries. Findingwhat leads students to binge drinking will help find apreventive solution to college student drinking rates. This study is focused on finding the relationship between sensory input during the drinking event and drinking patterns in college students. It is established that sensory properties influence food choices and behaviors, “a food sensory appeal is largely determined by the physical and chemical properties that are sensed before and during consumption, which informs initial acceptance and the degree to which a food will be consumed.” There is a gap in the literature about how sensory intake impacts alcohol choices, habits, and blackout (alcohol-induced amnesia) tendencies. By breaking downaspects of a person’s environment, it may be possible to find a connection betweensenses and drinking habits. This study collects data from college students at a midsized, midwestern college through an online survey called the Student Health Survey. The data will be qualitative, asking students about a recent heavy drinking experience, and surveying them about the senses they remember experiencing. This data will also be compared to questions about their drinking habits such as how often and to what extent they drink alcohol. Responses will review each sense individually to see what is most mentioned. The expected findings are that people experiencing specific sensory inputs also have heavier drinking habits and are more prone to blacking out. This study is important to understand how impactful sensory input is on drinking choices and health.

Fiebig, Morgan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Caden Joergens,
Morgan Fiebig

Abstract Name: **Skeletons of Algebraic Surfaces in Grasshopper**

Algebraic surfaces can be difficult to understand from a 2D view, such as on a screen, and creating an accurate physical model comes with many inherent problems, specifically at points of singularity which cause the model to break easily. Past attempts to solve this problem have included global and piece-by-piece solidification. This ongoing project attempts to create printable models piece-by-piece and place a plug and socket connection at connecting singularities, allowing the model to be taken apart and snaped back together. We previously used OpenSCAD, but it was unable to perform the necessary Boolean operations, so we opted to change tools. Related work done in Summer 2022 focused on porting code to Rhino3D and Grasshopper. The current project extends upon this work and aims to compute and print the skeleton of algebraic surfaces, incorporate the plug and socket connections, and add shells, allowing for the printing of larger and more intricate models of algebraic surfaces.

Fields, Gwendolyne

Institution: *VA - George Mason University*

Discipline: Biology

Author/Contributors:
Gwendolyne Fields

Abstract Name: **Comparing Growth Rates of Somaliland and Namibian Cheetah Cubs**

Cheetahs (Acinonyx jubatus) are classified as endangered species by the IUCN, facing major threats of habitat loss, illegal pet trade and human-cheetah conflicts. With approximately 7,500 individuals left in the wild across Africa, research is significant to understanding and ensuring the species' survival. At Cheetah Conservation Fund (CCF), located in Namibia, research has been ongoing since its establishment in 1990, and was once known as the cheetah capital of the world. CCF also has a campus in Somaliland, where currently 86 cheetahs of the "Tanzanian cheetahs" (Acinonyx jubatus raineyi) are being cared for, while 29 "South African cheetahs" (Acinonyx jubatus jubatus) are at Namibia's facility. Caretaking of young cheetahs is critical to their survival and one of the goals of the Namibia and Somaliland facilities is to facilitate the healthy growth of captive cheetah cubs. This project investigates the comparison of growth rates between Somaliland and Namibian cheetah cubs. Through CCF's data of cheetah cubs rescued between 2006-2022 within Somaliland and Namibia, weights, meat and milk consumption has been recorded from 0-6 months and organized in a new Excel Spreadsheet. 19 individuals are recorded from Namibia, and 46 are recorded from Somaliland. Through preliminary results, we found that growth rates of cubs 0-6 months old indicate males have a higher growth rate than females, and Somaliland has a lower growth rate than Namibian cheetah cubs. As research in this field has not been done, these results could indicate important information to improve caretaking skills and in the long-run, the species' conservation. Further statistics will be conducted to understand more about growth rates and what affects it, as well as the difference between Namibian and Somaliland cheetah cubs.

Fillion, Chase

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Chase Fillion *Daina Kalnina* *Zach Rohde*
Kya Meuiner *Chris Connoy* *Molly Halverson*
Lydia Przytulski *Dr. Evan Weiher*

Abstract Name: **Ground-dwelling invertebrate assemblages are influenced by plant traits in deciduous forests, but not in evergreen-dominated forests.**

Ground-dwelling invertebrate (GDI) community composition is an important but often underrepresented part of forest ecology. GDI communities are crucial for breaking down leaf litter and recycling nutrients in forest ecosystems. Plant functional traits can affect leaf palatability and decomposition rates.Even so, little is known about how plant functional traits influence the composition of ground dwelling invertebrate communities. In addition, the relative importance of tree canopy traits and understory vegetation traits has not been investigated.We placed three pitfall traps in 40 locations in Northern forests (i.e., mainly evergreen conifers) and Southern forests (i.e., mainly deciduous trees) across a strong gradient in soil moisture. We used the vegan package in R to ordinate the GDI composition in the two forest types and investigated how GDI composition varied with moisture and vegetation composition and traits. We found that the North and South GDI community compositions did not respond similarly to environmental variation. Some taxa did not covary consistently. Hymenopterans (ants) were mostly located in dry forests in the North, but they were found in areas with more moisture in the South. Path analysis showed that moisture effects were mediated by vegetation in both Northern and Southern forests, however the in the North, understory trait composition had no effect on GDI composition, while tree canopy composition had nearly twice the effect of tree trait diversity.In the South, understory trait composition had moderate effects on GDI composition, while tree canopy composition had a stronger effect.Overall, vegetation effects were about twice as strong in the Southern forests.

Fincher, Isabella

Institution: *CO - University of Colorado at Boulder*

Discipline: **Communication/Journalism**

Author/Contributors:
Isabella Fincher

Abstract Name: **An examination of mainstream media's treatment of female guitarists**

The music press in the United States has historically marginalized and under represented female guitarists in rock and blues, especially Black women. This phenomenon can be traced back to widespread gender inequality and racism in white, male-dominated rock'n'roll culture and the masculinization of electric guitar. Previous research about the music press examines how itplayed an important role in reinforcing the gender-based status quo of rock by systematically denying women artistic credibility in various ways. Focusing exclusively on female guitarists,this study uses quantitative and qualitative analysis of 565 articles from 10 publications about 43influential female guitarists. Overall, these findings provide evidence to support the lack ofmedia coverage, resulting in symbolic annihilation. By portraying female guitarists as women first and musicians second, the music press denies them credibility and reinforces traditional stereotypes of the guitar as a masculine instrument.

Fine, Benjamin

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **FAN Abstract**

Author/Contributors:
Benjamin Fine,
Mckenzie West

Abstract Name: **Reflections on how alternative grading strategies can aid in increasing meaningful student interactions and opportunities**

Recently there has been a growing interest in moving away from traditional grading strategies in favor of alternatives that allow faculty to increase the number of meaningful interactions with their students; primarily research engagement. This short talk will introduce two alternative grading strategies, Equity-Based Grading and Specifications Grading, and discuss the effects implementing these strategies had on undergraduate research in both Computer Science and Mathematics courses. The data and observations to be discussed have been collected from nine sections of five unique undergraduate courses across two semesters including both introductory and upper-level courses. While some strategies do not reduce the amount of time required for the evaluationof students' work, they do shift the evaluations away from traditional 'isolated'grading to interactions with the students. With this increased contact time with thestudents, we are afforded the ability to integrate research into our courses. Having more research experiences in our courses will help foster the skills and expectations needed for our students to be productive in research activities outside of the classroom. In addition to the flexibility of assignments and increased interactions with the students, we have noticed a shift in the focus of our students. From our observations, students seem to be more invested in understanding the problem at hand and somewhat less focused on the steps needed to be taken for a particular grade; thus leading to better skills and understanding of their research activities.

Finke, Brianna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Brianna Finke,
Bethany Laatsch,
Molly Mohr,
Thao Yang,
Sudeep Bhattacharyay,
Sanchita Hati

Abstract Name: **Evaluation of the Effects of Molecular Crowding on the Enzyme-Substrate Binding Using Saturated-Transfer Difference NMR**

The in vitro studies with enzymes are conventionally performed in dilute conditions containing mainly the desired buffer and salts. However, these conditions do not accurately reflect the in vivo crowded environment of a cell that can impact the structure, function, and dynamics of an enzyme. The present study focused on Escherichia coli Prolyl-transfer RNA synthetase (ProRS), a multidomain enzyme that is involved in catalyzing the ligation of proline to tRNAPro during protein biosynthesis. According to previous studies, molecular crowding affects the catalytic efficiency of ProRS. However, the molecular mechanism of the crowding and confinement on enzyme catalysis has remained elusive. In this study, the binding affinity of ProRS to its substrate, adenosine triphosphate (ATP), was probed in the presence of synthetic crowder molecules like ficoll 70, Dextran 40, and PEG 20. Saturation Transfer Difference-Nuclear Magnetic Resonance (STD-NMR) spectroscopy was used to analyze the binding affinity of ProRS for ATP, both in the presence and absence of crowder molecules. In parallel, computational docking study was performed to assess the crowding-mediated changes in substrate-enzyme interactions. The results of this study are expected to further our understanding of the molecular mechanism of crowding and advance structure-based drug design. Preliminary results of the study will be presented.

Fiore, K. Rose

Institution: *PA - Susquehanna University*

Discipline: **Biology**

Author/Contributors:
K. Rose Fiore,
Tessa Petrangelo

Abstract Name: **Exposing Sperm to Thalidomide Prior to Fertilization Results in Abnormal Embryogenesis in Sea Urchins**

Thalidomide, originally introduced in the 1950s for off-label treatment of hyperemis gravidarum, resulted in birth defects in approximately 10,000 children exposed in utero (1957-1962). Due to its anti-inflammatory properties and non-addictive nature, the U.S. FDA approved thalidomide in 1998 for treatment for leprosy and other diseases with inflammatory components. Clinical pharmacokinetic research indicated that thalidomide can be found in semen. Whilst the FDA classified thalidomide as unsafe for use by pregnant females, little work focused on the effects on embryos exposed to thalidomide through either sperm or semen. The FDA Thalidomide REMS program recommends males using protection for pregnancy prevention while taking the drug and for 4 weeks after stopping treatment. Sea urchin embryos serve as good model organisms for studying early embryogenesis. They are also sensitive to thalidomide. Previous research in this lab noted that sea urchin embryos fertilized with thalidomide pretreated sperm exhibit five times more abnormalities than controls. To examine this in more detail, we will generate a dose response curve for sperm pretreatment and observe embryos at 24-hours (gastrula), 48 hours (blastula), and 72 hours (pluteus) for malformations and other abnormalities. To evaluate teratogenesis compared to toxicity, we will evaluate cell viability and apoptosis comparing treated embryos to controls. We expect to find that higher concentrations of thalidomide sperm exposure will yield a higher percentage of malformations in embryos compared to controls. In addition, immunofluorescent cell dyes will be used to evaluate cell viability and apoptosis. We anticipate that embryos resulting from thalidomide pretreated sperm will exhibit differences in cell viability and apoptosis induced cell death compared to controls. This research addresses broader implications about the potential paternal contributions to teratogenesis.

Fisher, Anna

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Sociology

Author/Contributors:
Anna fisher

Abstract Name: **Impact of Fat Studies Course on Body Image**

Body image is how someone sees themselves in the mirror or in their mindIt affects mental,physical and emotional health, specifically in quality of life, psychological distress, and the prevalence of unhealthy behaviors. Because of fatphobia, diet culture, and social media, young adults and adults in their early 20s to 30s are especially affected by body image and people's perceptions on their bodies.For this project, we are seeking to answer the question whether exposure to an upper level, semester-long, undergraduate course on fat studies has an impact on students' body image and their relationships with their bodies.We are using data that was collected over a three-year period between January 2019 and December 2021. Content analysis will include written student assessments (N=78) completed at the beginning and end of the course from students who took Fat Studies and Body politics and follow-up interviews (N=17) with students from the first cohort.We believe that after being exposed to a fat studies course,the students' perceptions of their body and body image will overall improve and thatit will also increase their awareness on how fat is a social justice issue. The purpose of Fat Studies and Body Politics is to explore the social construction, medicalization, and pathologization of fat bodies in the United States. Fat is examined as a social justice issue that intersects with race, class, gender, sexuality, and ability status. This course explores the body politics behind attempts to redefine fat identity, including body positive and fat positive movements.

Fitz, Alexia

Institution: *MD - Towson University*

Discipline: International Studies

Author/Contributors:
Alexia Fitz

Abstract Name: **Alliance Dilemma: Decreasing State Compliance with Nuclear Treaties and Increasing Useable Scenarios of Nuclear Warfare**

Since the rapid development of nuclear weapons in the 1940s, many international laws have been put in place to combat these dangerous weapons. Many treaties created by the international community seek to limit the use, stockpiling, threat of use, production, and sharing of nuclear weapons, including the Treaty of Non-Proliferation of Nuclear Weapons (NPT) and the Treaty on the Prohibition of Nuclear Weapons (TPNW). State compliance is crucial for international security regarding the success of nuclear treaties. Some assumed that because of the destructive nature of nuclear weapons, states are interested in ratifying and complying with treaties that work to eliminate these weapons. However, as time has progressed, states have been less willing to be a party to nuclear treaties as seen with the lack of state support for TPNW. Similarly, members of the international community fear that state compliance could decrease and lead to the possible use of nuclear weapons. This project asks, what is preventing progress on eliminating nuclear weapons? This research argues that the existence of an alliance dilemma interferes with state compliance related to nuclear treaties. Despite the fact that these treaties and alliances are established to increase state security, alliances actually increase the possible scenarios for and chances of nuclear warfare.This result occurs because nuclear alliances bring nuclear states and non-nuclear states together under one umbrella, meaning that these weapons could be engaged as a result of conflict between states that do not possess nuclear infrastructure themselves.This argument creates a new way of examining the success of nuclear treaties beyond simply looking at compliance by nuclear states.

Fitzgerald, Odran

Institution: *TX - Southern Methodist University*

Discipline: Environmental Studies

Author/Contributors:
Regina Nguyen *Odran Fitzgerald* *Collin Yarbrough*
Janille Smith-Colin *Jessie Zarazaga*

Abstract Name: **Developing A Community-Engaged Design Framework for Community Environmental Justice Efforts**

Due to information accessibility and lack of technical resources, disenfranchised communities risk being spoken over by protective agencies in environmental justice (EJ) efforts. However, academics can use community-engaged research methods to understand the afflicted population's needs and vision for remediative action. In previous academic-community collaborations, methods emphasizing stakeholder participation have shown to encourage residents to think creatively about their needs and potential solutions by allowing participation in the design process. This study evaluates the benefits of allowing community members greater control in design decisions by collaborating with a community in Garland, Texas concerned with their neighborhood's history of industrial pollution and possibly-related epidemiological concerns. Over the course of the study, the research team developed a new design framework geared towards enabling citizen autonomy after short-term community-academic partnerships. This framework modified the traditional design thinking (DT) process by increasing the frequency of "choice points" which allow stakeholder feedback to alter the product during all stages of the design process. Ethnographic interviews were used to collect community perceptions as site conditions evolved. Then, insights derived using qualitative data methods were used to drive the design process. By the end of the study, use of the framework resulted in multiple product prototypes for community use and a positive relationship with the citizens involved in the EJ effort. Moreover, retrospective stakeholder feedback It is expected that applications of the design framework in other EJ sites and disciplines will contribute to continuing research efforts to establish ethical and equitable methodologies for community-engaged and community-based work.

Flack, Olivia

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: Biology

Author/Contributors:
Olivia Flack,
Emma Zobitz,
Kristina Timmerman

Abstract Name: **Prescribed Burn Effects on Animal Species in the St. John's Abbey Arboretum**

We investigated the impacts of prairie prescribed burns on small mammal diversity in the Saint John's Abbey Arboretum, Collegeville Minnesota. We hypothesized that there would be a correlation between burn age and degree of diversity. Based on this hypothesis, we predicted that older burns would have greater diversity. During June and July of 2022, we placed 18 traps on each of three different burn age plots (four, two and one years). Traps were placed 15 meters apart and were opened in the evening and checked early morning on the next day (H.B. Sherman live traps, model 3310A). Traps were baited with peanuts, oats, and raisins. Data collected for each trapped animal was plot name, trap ID, species, weight, gender, reproductive status, total body length and left hind leg length. Captured animals were released at their trapping site. A Chi-square goodness of fit was used to analyze data. Our mammal diversity among plots was not as expected – we trapped only house mice (Mus musculus). There was a difference in number of animals trapped on the three plots ($\chi 2 = 22.65$, $df = 2$, $p = 0.0001$). More animals were trapped on the plot with a one-year burn. One factor that might contribute to trapping only one species is an extremely wet spring and summer. The ground was frequently saturated, and the vegetation density was hard for even us to walk through. We plan on continuing this study in 2023. We think that this research is important because today less than 1% of prairies remain in North America and are fragmented and scattered around.

Flores, Daniel

Institution: *TX - The University of Texas at El Paso*

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Blancas *Jose Luis Herrera* *Manuel Morales,* *Valeria Valencia* *Daniel Flores*

Abstract Name: **Efficacy of Social and Physical Support for Cancer Patients**

Cancer is the second leading cause of death in the United States. In addition, cancer treatments provoke harsh side effects that demand extra strength from the patient. Cancer causes lifestyle modifications that can be detrimental on the patients' health; however, healthy habits can potentially increase the chances of a positive prognosis. Additionally, physical, and social support has proven to help patients in their fight against cancer. Since the lack of physical and social activity in patients with cancer has been shown to correlate with mental and cognitive decline, ultimately reducing quality of life, the purpose of this study is to examine the relationship between physical activity and quality of life in patients with cancer And increase their overall quality of life.This project included eight female participants that are currently struggling with cancer, or the cancer is in remission. The program consisted of group discussions, fine motor movements, and various physical activities twice a week for three weeks. Using pre/post intervention questionnaires and a dependent t-test, the significance of social and physical activities amongst the participants were analyzed. The dependent t-test showed a significant difference (t=-3.729, p=0.007) in the overall quality of life between pre and post program. These preliminary results imply that implementing a support group such as Healthy Habits that includes the use of physical and social activity, improves the overall quality of life of patients with cancer. In conclusion, the program created an additional outlet for individuals with cancer to find a relatable support group that can aid with daily struggles. Further analyses in a larger sample and with longer duration will provide stronger evidence about the relationship between physical activity and quality of life in patients with cancer.

Flores, Dayana

Institution: *CA - California State Polytechnic University - Pomona*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Dayana Flores *Sudhan Nagarajan* *Leela Mohana Reddy Arava*

Abstract Name: **Understanding Multi Cathode Blend Strategy for Non-flammable Extreme Temperature Li-Ion Batteries**

Issues of rechargeable lithium-ion batteries at high temperatures are a constant problem that affects our society in different ways. This is due to the instability and limited knowledge of the electrode-electrolyte interface, especially cathode electrolyte interphase (CEI) for Li-ion cathode materials at high temperatures. Sustainable rechargeable lithium-ion batteries with a high capacity, a good cycle life, and high thermal stability are necessary to combat environmental, economic, and social problems around the world. Therefore, in this study, possibilities for low cobalt and high-temperature stable cathode materials using a multi cathode blend strategy in thermally stable ionic liquid electrolytes are explored. LiNi0.5Mn0.3Co0.2O2 (NMC532), a material with high electronic conductivity, energy density, and low thermal stability, was blended with LiFePO4 (LFP), which is a thermally stable material with a low energy density and electronic conductivity. This was done to combine the properties and characteristics of both materials and get a cathode material with improved performance for extreme temperature Li-ion batteries. Electrochemical characterization at 100 °C was performed on the blended cathode material and individual ones, NMC532 and LFP, fabricated using coin cell test structures and Li-metal anodes. Electrochemical studies indicated that the blended NMC532|LFP cathode material has a stable lithiation-delithiation reaction after few initial electrochemical cycles and the obtained specific capacity is between the specific capacities of the two individual cathode materials. Besides, from the first to the fifth cycle, the particles of the blended cathode material experience in situ activation to provide good interfacial properties. With this understanding, we believe that the fundamental understanding on high temperature cathodes using low cobalt materials is of paramount importance to transform the ambient temperature Li-ion technology to high temperature applications.

Flores, Emily

Institution: *TX - Laredo College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Emily Flores

Abstract Name: **Dreaming In Isolation: The Effects of Dreams During the Pandemic**

The COVID-19 pandemic introduced extreme levels of panic from being forced into isolation from loved ones, fearful that there would be no food on the table for dinner, and feeling that there would be no end to the rising death rates. The world was in a collective state of mayhem, both mentally and physically. Furthermore, even when individuals looked forward to resting at the end of the day, the feeling of dread lingered and snuck into their dreams. Visual imagery reported by people during the pandemic explained how their dreams ranged from being absent to being extremely vivid. This study explores the relationship between nightmare occurrence and the COVID-19 pandemic. Peer-reviewed articles were gathered to collect information on the types of dreams and the effect COVID had on dreams. An 11-question survey comparing sleep quality, stress levels, dream frequency, and nightmare frequency before, during, and after the COVID-19 pandemic was completed by 69 participants. A One-way Analysis of Variance (ANOVA) and T-test was used to examine the data collected from the survey. The ANOVA tests revealed that there was no difference in stress level, dream frequency, nightmare experience, and sleep quality before, during, and after the COVID-19 pandemic. From the 71 participants, 46% tested positive for COVID-19 at one point and were asked questions about their dreams and 30% of them stated to have had nightmares while they were sick. The vividness of dreams were also measured for each participant to better understand aphantasia and hyperphantasia. Aphantasia is characterized by an absence of visual imagery, whereas hyperphantasia refers to vivid visual imagery. Future data needs to be done on the correlation between sickness and dreams to better understand parasomnia as well as dream vividness.Keywords: COVID-19, dreams, sleep quality, aphantasia, hyperphantasia

Flores, Kenan Andre

Institution: *KY - University of Kentucky*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Kenan Andre Flores,
Viral Oza,
Jessica Blackburn

Abstract Name: **Repurposing FDA-approved drugs to re-sensitize TP53 mutant Diffuse Intrinsic Pontine Glioma to radiation therapy**

Diffuse Intrinsic Pontine Glioma (DIPG) is a pediatric brain cancer that forms in the brainstem, mainly affecting children aged 4-11. The survival rate of children with DIPG has not changed in more than 50 years, and remains <1%. While there is no cure for DIPG, radiation therapy has shown to be beneficial in providing temporary symptomatic relief. However, all DIPG will become resistant to radiation therapy. Most DIPG has inactivation of the p53 pathway, mainly through mutation of the tumor suppressor protein p53 (TP53). TP53 plays an important role in regulating apoptosis, cell cycle arrest, metabolism, senescence, autophagy, and aging. A common phenotype that is associated with TP53-mutation is resistance to apoptosis induced by radiotherapy. We hypothesized that TP53 mutation in DIPG contributes to radio resistance of the tumor, and by reactivating the pathway, we could resensitize the cells to radiation therapy. In prior research, the Blackburn lab completed a screen of 1,400 FDA-approved compounds to find drugs that could be repurposed to sensitize a TP53 mutant zebrafish line to apoptosis after irradiation, but did not induce apoptosis in the animals when no irradiation was given. The top 9 hits from this drug screen were further tested in radioresistant human TP53 mutant DIPG cells. To date, two of the hits, Tamibarotene and Veliparib, show good efficacy in resensitizing DIPG to radiation, resulting in a 1.35-fold reduction of cell viability at the most efficient concentration when given with radiation, than when cells were treated with radiation alone. Future studies will test the remaining drugs and determine the mechanisms by which the top hits reactivate apoptosis in the irradiated cells.

Flores, Luis

Institution: *TX - The University of Texas at San Antonio*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Gabriela Romero,
Luis Flores

Abstract Name: **P(NIPAM-co-MAA) Macrogels as Wound Dressing Biomaterials**

The goal of this research is to investigate potential biomedical applications of hydrogels by characterizing the properties they demonstrate when synthesized with various combinations and concentrations of organic or inorganic polymers. We have chosen to explore the effectiveness of hydrogels as wound dressings in terms of maintaining a sterile microenvironment to prevent biofilm formation in flesh wounds. To do this, we are testing the capability of macrogels derived from N-isopropylacrylamide (NIPAM) and Methacrylic acid (MAA) to retain and release the drug gentamicin sulfate in both a liquid and solid medium through stimuli-dependent behavior.

Flores, Yulisa

Institution: *GA - Kennesaw State University*

Discipline: **Nursing/Health Science**

Author/Contributors:
Yulisa Flores *Kirsten Davis* *Doreen Wagner,*
Sharon Pearcey

Abstract Name: **The Influence of Surgical Stress and Inflammatory Biomarkers on the Occurrence of Postoperative Delirium**

Research focusing on hypothermia has established a relationship between surgical stress and inflammatory biomarkers on delirium incidents in critically ill non-cardiac surgical patients. Unfortunately, postoperative deliriumis a common complication after surgery and results in acute brain failure. Though the cause of delirium is still relatively unknown, systemic inflammation with neurological involvement is one of the leading etiologic theories. Another common complication in surgical patients, is the occurrence of unplanned hypothermia during non-cardiac surgeries. For our study, we will be looking at two inflammatory biomarkers: C-reactive protein (CRP), and Interleukin 6 (IL-6). CRP is produced in the liver and is an index of overall inflammation in the body and is found elevated in postoperative delirium. IL-6, a pro-inflammatory cytokine, promotes a variety of cell functions that stimulate end enhance inflammation and is also known as a brain-active interleukin. IL-6 is a biomarker identified as a predictor of postoperative delirium when compared to those that do not experience postoperative delirium.Delirium assessments, surgical temperatures, and blood samples will be obtained from at least 100 non-cardiac surgical intensive care patients at a local hospital for the first three postoperative days.) Our role in the project is to separate the serum from the blood and perform enzyme-linked immunosorbent assays (ELISAs) for CRP and IL-6. We will be assaying the separated serum to identify the levels of the two previously established inflammatory biomarkers. Through the comparison of inflammatory biomarker levels and surgical temperatures in non-cardiac patients with and without postoperative delirium we hope to establish the influence of inflammatory stress and unplanned hypothermia on postoperative delirium. It is hoped that the findings from this study will further the understanding of how to assess, treat, and prevent postoperative delirium. Presently, this is a work in progress and our findings will be shared at the conference.

Flowers, Allena

Institution: *VA - Virginia Commonwealth University*

Discipline: Biology

Author/Contributors:
Allena Flowers

Abstract Name: **Pet Insurance: Changing the Veterinary-Client-Patient Relationship for the Better**

The risk of suicide for veterinarians is disproportionately higher than the average population. Burnout in the profession is soaring. Pet owners are frustrated with veterinary costs and often have to put loved pets down because they cannot afford treatment. I wanted to explore if pet health insurance, which works somewhat similarly to human health insurance, could resolve the problems within the veterinary-client-patient relationship (VCPR). Tension in the VCPR can make clients distrust veterinarians, resulting in poorer care for pets and burnout for veterinarians. I researched three topic areas to find an answer to my research question: First, I focused on reviewing existing research about the relationship pet owners and veterinarians have with pet insurance. Second, I looked into exactly how the pet insurance industry works, including the actuary science behind creating monthly payments and estimating risk. Finally, I researched what pet owners and veterinarians expect from the VCPR, and how breakdowns in communication can occur. Compiling the details together, I found sound evidence to support the argument that more pet owners using pet insurance can help mend the VCPR, leading to better care for animals due to less financial strain. Most veterinarians favor greater use of pet insurance, and many pet owners who do have pet insurance are pleased with their choice. Certain aspects of pet insurance, like coverage for pre-existing conditions and increasing premiums for some breeds, need to be re-evaluated. There is also increasing concern among veterinary doctors over the direct pay model, which many fear could begin to dictate their medicine. Despite these concerns, the model for traditional pet insurance is still well-received by pet owners and most veterinarians. More research to increase the awareness of pet owners about the option of pet insurance is a positive first step to better care for our pets.

Fofana, Mamy Hamed

Institution: *MN - Minnesota State University - Mankato*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Margaret Anderson *Mamy Hamed Fofana* *Nathan Pham*

Abstract Name: **Estimating Settlement of Strip Footings on Soft Clay Stabilized with a Granular Trench**

Research on foundation systems has brought increasing opportunity in the building construction sector for greater efficiency and accuracy in design. Available research development shows exploratory opportunity with a focus on quantifying the improvement offered by ground reinforcement through granular trench support in clay soils. Settlement analyses will be performed for a continuous strip footing placed on soft clay soil stabilized with a granular trench. The analysis software PLAXIS and LimitState:Geo will be used to develop models for evaluation and provide ultimate bearing capacity the along with settlement for considered configurations. Results from the theoretically developed model will be compared with published research for physical modeling and numerical method results in literature. The results will help the engineer to estimate the settlement when considering the inclusion of a granular trench beneath the strip footing. Design parameters such as trench depth, trench width, footing width, and friction angle of the granular material in the trench will be varied in this study to investigate their influence on the foundation settlement. Phase 1 of this research, which focused on quantifying the ultimate bearing capacity, was completed and concluded that these design parameters influence the design significantly. The current research (Phase 2) continues the investigation efforts of the various design loading parameters based on a set settlement. The models being used in the settlementevaluated used ratios of trench width to foundation width and then increasing the trench depth to width until the loading needed shows a plateau. With the addition of settlement, the engineer will be able to create a comprehensive foundation design for the problems in hand byaddressing the maindesign constraints: strength and settlement. As an availableresource, the results will provide progression in ability to accurately design reinforced foundation supports in building projects.

Fogle, Emily

Institution: *OK - Cameron University*

Discipline: English/Linguistics

Author/Contributors:
Emily Fogle

Abstract Name: **An Analysis: Self-Narrative in Toni Morrisonðs Sula: Abstract**

Self-narrative is a widely studied and discussed concept of psychology that affects everyone's thoughts, actions, and lives. This concept illustrates an internalized process where individuals formulate a narrative about themselves and their lives inside their minds. These narratives follow the structure of a story narrative. They contain a plot, characters, setting, themes, and a timeframe consisting of a past, represented by memories, a present, and a perceived future based on past and present experiences. Throughout Toni Morrison's "Sula", we meet a wide array of people, and we follow them along their journeys as they make their way through life. We watch as bystanders as they try to make sense of, react to, and cope with an abundance of extremely complicated and individually distinct experiences. We formulate opinions on the world and characters that Toni Morrison created, and we pass judgment on the characters' actions and the choices that they make. However, we carry with us our own preconceived notions, life experiences, personality traits, world views, and many other contributing factors that dictate how we formulate these opinions and judgments. All these factors are what help us to build our self-narrative. The characters that we observe in "Sula" also have their own inimitable self-narratives. They are the narratives that they have constructed in their minds about who they are and how they should interact with the world around them. These self-narratives, not their actual aspirations or desires, are what dictate the choices they make.

Folkenroth, Kate

Institution: *PA - Allegheny College*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Kate Folkenroth

Abstract Name: **Dusting off the Archives: Digital Curation & Information Justice**

In the age of information, tension exists between information quantity and accessibility. Digital curation is the process of collecting, selecting, organizing, storing, and displaying items with the respective information using technology. It is also a strategy to address this conflict; it reduces the quantity and refines the quality of digital products on the internet. While this strategy may sound ideal, curation requires 'intermediation' which allows for the information to be displayed, but may cause erasure, skewing, or insertion of bias such as "whitewashing" for archived items. Technology is not a neutral entity; information systems perpetuate the social systems in which they are created. Intermediation, therefore, has the potential to replicate all of the social injustices present in society. Without acknowledging these inequities, archivists may unintentionally reinforce these power dynamics. However, curators are also well-positioned to increase information accessibility through praxis. This project introduces an open-source digital archive and archival workflow for a small academic institution, exploring curators' ability to address these injustices. To understand the intricacies of practice, I conducted a paired literature review and scoping review of established archives to reflect both theoretical best practices and current practicalities of technological implementation. Then I tested the digital system and workflow against a case study: the curation of a donated wooden sculpture. This work illuminated a number of difficulties that were not highlighted by the literature alone. Disciplinarity is heavily reflected through the intermediation of curation to the point of creating terminology barriers. Another barrier is the technical expertise required to create and maintain an accessible archive. Even though this work is an opportunity for interdisciplinary collaboration between experts, faculty, staff, and students, sustainability and continuity of work cannot be achieved with current practices.

Fones, Stephanie

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Stephanie Fones,
Scott Schaefer,
Dr. Lindsay McHenry

Abstract Name: **Identifying the impact of environmental influence on XRF analysis; implications for Mars sampling**

X-ray fluorescence (XRF) sampling is a common method used for geochemical analysis of rocks on Mars. Many rover and lander missions have employed drilling or abrasive tools to remove the external face of rock samples to mitigate inaccuracies in geochemical analysis due to weathering. The objective of this project is to test for a potential sampling method that could yield predictable geochemical analysis of a rocks' interior based on readings from altered external surfaces when the rock cannot be physically sampled by rover or future manned missions. For this study we are conducting XRF analysis of basalt samples to see if external surfaces that have been exposed to weathering yield predictable geochemical patterns of departure from internal geochemistry. Basalt samples will be collected from Houghton Michigan because it is a common rock type on Mars and because many minerals in basalt weather rapidly. We predict that the exterior surfaces of rock will yield consistent XRF geochemical departures as compared to the internal control data if environmental weathering is truly a contributing factor. If a consistent pattern of geochemical alteration is identified, it may be possible to make reasoned predictions about the nature of unaltered internal geochemistry for some rocks that cannot be physically sampled.

Foote, Tiffany

Institution: *MA - Worcester Polytechnic Institute*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Foote,
Gabriel Brown,
Nishan Grandhi,
William Michels

Abstract Name: **Assessing Lupine as an Environmental Conservation Tool in Iceland**

Iceland's environment is highly prone to erosion and has conditions that make plant growth challenging. The plant lupine is a divisive solution to soil erosion and reforestation that has been found successful in some regions of Iceland but not all. We researched the issue through extensive document research, expert interviews from different perspectives, and surveys of native Icelanders, to get as complete and unbiased a picture of the issue as possible. We used this to create a decision guide that gives a comprehensive account any person in Iceland can use in order to choose what they would like to do to address soil conservation and reforestation issues on their land. Key issues the decision guide covers are soil conservation, reforestation, and removal of lupine. Along with the decision guide, we include a decisional balance sheet to show the pros and cons of lupine usage in Iceland and a plant infographic to teach about the plants in the decision guide. These tools can be used by land owners in Iceland to make decisions about restoration and reforestation on their land.

Footit, Emma

Institution: *MN - University of Minnesota - Duluth*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Emma Footit,
Dr. June Lee,
Dr. Daehyoung Lee

Abstract Name: **Parental Perceptions of Physical and Outdoor Activities in Their Adult Child with Autism and Intellectual Disability**

Background: Adolescents with autism spectrum disorder (ASD) have been found to have lower levels of physical activity than their typically developing peers (Stanish et al., 2017). This concerning degree of physical activity is likely to continue into adulthood (Pan; Frey, 2006), causing unfavorable health concerns, and even premature death (Tomaszewski et al., 2021). Adults with ASD and an intellectual disability (ID) are at higher risk of being physically inactive due to various barriers. Purpose: The purpose of this study is to investigate parental perception on benefits, challenges, and needs of physical and outdoor activity participation in their adult child with ASD and an ID. Methods: Up to seven families will be interviewed in a 1-2 hour session to find their perceptions of physical and outdoor activities regarding their child. Interviews will be audio-recorded and later transcribed for qualitative analysis. My observation and field notes will also investigate the perceived feelings or attitudes of adults with ASD and ID regarding their previous and current outdoor and physical activity participation. The interview data will be combined with field notes and analyzed using NVivo data analysis software. Common code and themes will be emerged across the interviews and field notes for thematic analysis. Expected results: I anticipate there will be common themes throughout the interviews, including parents feeling like getting their child active and outdoors is a burden, a lack of accessibility for adults with ASD and ID to get active, and outdoor physical activities having more positive results than indoor physical activities. The findings of this study will be beneficial to inform the benefits of regular outdoor and physical activity and potential strategies to meet the unique needs of this underserved population.

Forberg, Courtney

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Courtney Forberg *Archer Peacock* *Rebecca Romero*
Grace Taylor *Zach Yelich* *Stephanie Stockwell*

Abstract Name: **The Future of Plastic Waste: A Multi-Disciplinary Approach**

Approximately 300 million tons of plastic waste is produced every year worldwide; only ~7-9% is recycled. The result is harmful plastic waste accumulation that negatively impacts ecosystems and communities around the world. Polyethylene terephthalate(PET) is one of the most abundant plastics due to its transparency and chemical strength. While naturally occurring PET-degrading bacterial enzymes have been identified (i.e., PETase and MHETase), their physiological requirements make them ill-suited for industrial use. We attempted to address this problem by bioengineering a chimeric PETase::MHETase protein for enhanced PET degradation. Review of recent literature revealed a collection of PETase and MHETase-optimizing mutations shown to enhance temperature and pH tolerance. Building from this work, our approach was to combine these nucleic acid changes into a single modified open reading frame (ORF) to support even greater PET degradation capabilities. The synthetic plasmid DNA construct was transformed intoE. coliand expressed to produce a novel chimeric protein. The biomanufactured product was purified by nickel column chromatography and quality-tested using standard assays. Finally, functional assays allowed us to measure PET plastic degradation. Recognizing that typical practices in life science laboratories are part of the plastic waste problem, our team explored and implemented ways to make our laboratory—and others like it—more sustainable. Additional methodologies from the field of STS (Science, Technology and Society) were used to consider, imagine, and develop greater understanding of the implications of plastic waste and how a bioremediation-based solution might be implemented in the future.

Forbes, Samantha

Institution: *VA - James Madison University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Samantha Forbes,
Daniel Downey,
Rachel Stegmeier

Abstract Name: **Analysis of Commercial Extraction Methods for Removal of Phytocannabinoids from Hemp Biomass**

Phytocannabinoids are produced from a plant called cannabis sativa (hemp) for protection from insects, UV light, and winds. Phytocannabinoids are extracted to produce products with alleged medicinal benefits. Phytocannabinoids that are of particular interest were cannabidiol (CBD), cannabidiolic acid (CBDA), Δ-9-tetrahydrocannabinol (THC), and Δ-9-tetrahydrocannabinolic acid (THCA). Single-pass ethanol, multi-pass ethanol, and supercritical CO2 extraction were the extraction methods examined to improve yield, throughput, and product quality. The extraction process is started by passing a solvent (ethanol, carbon dioxide, hexane, etc.) through hemp biomass. The solvent is removed through evaporation to produce crude oil. The oil is further refined by the operator to sell as medicinal products. The analytical methods used to determine concentrations were High-Pressure Liquid Chromatography Ultraviolet Detection (HPLC-UV) and Gas Chromatography Flame Ionization Detection (GC-FID). Single-pass ethanol extraction had the most CBD percentage in the crude oil product after extraction. Multi-pass ethanol extraction was the most effective for the throughput of the product. For multipass ethanol extraction, the fifth cycle was the maximum amount able to be extracted but the third cycle was the point of diminishing returns. During multi-pass ethanol extraction, CBDA was preferentially extracted compared to the other phytocannabinoids measured. The supercritical CO2 extractor removed the most CBD and THC percentage at 89% and 73%. While single-pass ethanol extraction recovered the least CBD and THC at 66% and 59%. A thorough analysis of the extractor would allow commercial operators to reduce time, labor, and expenses for commercial extraction.

Ford, Jasmine

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication/Journalism**

Author/Contributors:
Jasmine Ford

Abstract Name: **Stopping the Spread: An Autoethnographical Examination of Intergenerational Transmission**

Expectations for the performance of US American masculinity and femininity highlight the bind in which individuals are placed. Modern conceptions of masculinity and femininity both expect that individuals embody and transcend stereotypic gender norms (Wood, 2011). Gendered norms and expectations, as with most societal expectations, are first learned and reinforced within the family (Bandura, 1971). How do we change our communication so that individuals and families can transcend these learned behaviors? This paper is an autoethnographic examination of how learned and repeated communication behaviors perpetuate family trauma(s). Using my lived experiences, I will articulate how societal, familial, and intergenerational influences have affected communication behaviors within my family of origin. After contextualizing my lived experiences in the literature, I will offer researched-based solutions for breaking the cycle.

Ford, Natalie

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Paalman *Sam Frauenfeld* *Christopher Santiago*,
Natalie Ford *Lee Watson* *Ian Leiker*

Abstract Name: **The effects of restoration projects on phosphorus concentrations throughout Manitowoc County streams and Lake Michigan**

Phosphorus poses an ongoing challenge to Lake Michigan. Excess levels cause algae blooms resulting in degraded water quality in near-shore waters. As local tributaries serve as important phosphorus sources to Lake Michigan, we analyzed phosphorus levels in two streams in Manitowoc County, WI—Centerville Creek and the Little Manitowoc River.These streams have historically exceeded Wisconsin DNR surface water phosphorus standards of 0.075 mg/l phosphorus. Each stream has undergone restoration near where they enter Lake Michigan in order to slow stream flow and reduce phosphorus loading into Lake Michigan.Each creek showed a different trend in phosphorus concentration along its length.Centerville Creek showed lower phosphorus concentrations within the restoration area compared to the upstream branches, although all significantly exceeded the WDNR threshold. North branch averaged 0.510 mg/L phosphorus, and the south branch averaged 0.430 mg/L.Sites within the restoration project averaged 0.307 mg/L. In contrast, no difference in phosphorus concentration was noted between the upstream and restoration sites in the Little Manitowoc River.This may be because this restoration was more recently completed (2020 vs 2012), or due to the surrounding land use as the Little Manitowoc River runs through the city of Manitowoc, while Centerville Creek goes through agricultural land.However, overall concentrations across the Little Manitowoc River were lower than any of the Centerville sites, with an average concentration of 0.071 mg/L, below the WDNR threshold, and rain events did not increase phosphorus as much as in Centerville Creek. Future work will focus on identifying future sources as well as continued monitoring to evaluate the success of these restorations and inform land use decision-making.

Foreacre, Daniel

Institution: *PA - Millersville University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Daniel Foreacre,
Jingnan Xie

Abstract Name: **On Building a Mind: Replicating a Neural Network Model of a Neuron**

The future of AI depends on making our systems more like biological brains. Current technology and understanding are far from emulating an entire brain, but advancement canstart with their building blocks- neurons. Our research consists of two parts: the first is areplication of work by David Beniaguev, et al. entitled “Single cortical neurons asdeep artificial neural networks,” and the second is generating a new data setfor testing the model. The paper describes the authors’ creation and training of a temporal convolutional deep neural network (TCN) to accurately model a singleL5PC neuron. Our replication begins with code written by the authors and posted to publicrepositories, pre-trained Keras models, and original training data. Determining the structure of the neural network is accomplished by selecting one model and examining thefiles used to train and test the models. To generate a new data set for testing, we turn to aprogram created to simulate biophysical models of neurons called NEURON. The base of this model is provided through the ModelDB online database and is modified using the hoc language to approximate the one used by Beniaguev to generate a similar data set with inputs and corresponding outputs. Data is consolidated into a form readable by the TCN model, tested,and the prediction and accuracy values are recorded. Given the difficulty in recreating the NEURON model faithfully, the results show that the TCN model can accurately replicatethe results of a neuron simulation given the same inputs, yet the model may not beable to classify input patterns different from what it was trained on. The model performs well, but may not represent all possible neuronal states. This, however, leaves an exciting avenue for future research.

Forman, Christina

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Christina Forman,
Holly Stanislawski

Abstract Name: **Preventing NicoTEEN Addiction Through Nurse-Led Education on Vaping**

The aim of this research project is to develop, present, and evaluate an educational intervention on electronic cigarettes (e-cigarettes) and vaping for non-school staff adults who have influence on adolescents, such as coaches, counselors, and parents. The U.S.Surgeon General reported that the use of e-cigarettes continues to be a public health concern among adolescents. Additionally, according to the Centers for Disease Control, there is evidence that adolescents who use e-cigarettes are more likely to smoke regular cigarettes in the future. While there is a growing body of research on the short and long-term health effects associated with e-cigarettes and vaping, less is known about how we might best prevent adolescents from engaging in use of these products. This project targets adults that spend large amounts of time with adolescents and have the ability to influence them on the dangers of e-cigarettes and vaping. It involves the delivery of an interactive and evidence-informed presentation. The efficacy of the intervention is then studied by comparing pre- and post-test results. Results are forthcoming, but it is predicted that the educational intervention would improve participants' knowledge about vaping and e-cigarettes.

Fortson, Elizabeth

Institution: *VA - George Mason University*

Discipline: Environmental Studies

Author/Contributors:
Elizabeth Fortson

Abstract Name: **Ideologies of Production and the Environment: A Case Study of Local News Coverage Surrounding Enbridge Line**

Enbridge Line 3 is a crude oil pipeline running from Canada through the Great Lakes region. During its construction, it was heavily opposed by the Anishinaabe tribe and environmental groups, both for its use of fossil fuels and its route near Indigenous agricultural lands. This case is especially unique as a type of wild rice, Manoomin, on the lands, had recently been awarded legal personhood (influenced by the legal paradigm, "Rights of Nature"), obligating the government to protect Manoomin's well-being in ways that are analogous to the ways it would protect a human's. This conjecture of events provides an opportunity to critically interrogate discourses surrounding "development" and how groups of people come to see themselves in relation to non-human nature. Drawing on a systematic discourse analysis of the Star Tribune, I address the question of how "production" and the "environment" were conceptualized and prioritized during this period of increased salience; articles were chosen based on a keyword search of any article published between 6/28/2018-10/31/2021 that contained the words "production", "productivity", or "environment". I then coded the articles in NVivo, using a codebook of my own design, demonstrating how ideas of production and the environment were framed by the newspaper. This content analysis was contextualized with press releases from Enbridge and the Anishinaabe. Overall, the newspaper presented production as taking precedence over everything else. Some articles did prioritize things like health over production, but the articles never critically interrogated productivism as an ideology. More environmentally-focused articles were often presented as political think-pieces or tended to be more qualitative. Environmental concerns were often presented as external to production. While productivism was often explicitly endorsed, the newspaper used rhetoric that distanced it from alternative views of production and the environment, carefully not endorsing these positions.

Foster, Sarah

Institution: *KY - University of Kentucky*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Sarah Foster *Taylor Valentino* *Allison Owen*
Jensen Goh *Kirby Mayer* *John McCarthy*
Yuan Wen

Abstract Name: **Microbiome Derived Metabolites and Their Potential Protective Benefits During Sepsis and Immobilization Induced Muscle Dysfunction**

Background: The Covid-19 pandemic has uncovered major limitations in healthcare practices and presented major challenges to clinical nutrition support in the intensive care unit (ICU). Patients suffer from increased muscle breakdown, which exacerbates the body's ability to recover from the viral infection. The impact of the microbiome on enteral nutrition support for critically ill patients is not well understood. Research has focused on the pre-biotics (i.e. dietary fibers, simple/complex sugars, and amino acids/peptides/proteins) and pro-biotics (i.e. bacterial species of interest) improving patient outcomes, but other studies fail to find such benefits. Many bacterial derived metabolites (post-biotics) are absorbed into systemic circulation and taken up by peripheral tissue. Thus, the impact of the post-biotics are equally, if not more, important for the host compared to pre- and pro-biotics. We hypothesize that post-biotics, such as short chain fatty acids (SCFAs) and succinate, will contribute to attenuating the catabolic effects of sepsis and immobilization on peripheral tissue such as skeletal muscle.Methods; Results: Sepsis was induced in mice through intraperitoneal injection of anaerobic bacteria mixture. Antibiotics and fluids began 12 hours post sepsis induction and continued BID for 3 days. Immobilization was achieved using 3D printed casts and taped onto the mouse hindlimb unilaterally. Muscle function was assessed on day 4 post sepsis or immobilization by measuring plantarflexion in vivo using isometric force measurements. Mitochondrial function was assessed using high resolution respirometry, and reactive oxygen species production was measured using AmplexRed fluorescence. Short chain fatty acids and succinate are either provided with the fluids during resuscitation post sepsis or through drinking water ad lib. Conclusions: SFCAs and succinate may be required for protecting peripheral tissue during ICU-like conditions. Although more studies are required to confirm these findings in human patients, changing standard enteral and/or parenteral nutrition may help reduce ICU mortality.

Fox, Lauren

Institution: *NY - Wadsworth Center*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Lauren Fox

Abstract Name: **Determining the Functional Role of Short Open Reading Frames in Mycobacterium smegmatis**

This study examines the roles of a subset of short open reading frames (sORFs) in M. smegmatis using targeted mutagenesis and subsequent examination of the phenotypes associated with sORF absence or overexpression. sORFs are defined as stretches of nucleic acid encoding a protein with a maximum of 50 amino acids. Genome annotation pipelines overlook sORFs encoding small proteins (sproteins) and, thus, sproteins in bacteria have gone unnoticed, even those that are expressed at levels similar to larger proteins. Recent advances in ribosome profiling, mass spectrometry, and RNA-sequencing capabilities have identified hundreds of previously unannotated sORFs, increasing the number of annotated genes in both the M. tuberculosis and M. smegmatis genomes. Previously studied sproteins have been found to carry out diverse functions within the cell, ranging from modulating enzymatic activity to stress-response signaling. In the present study, sORFs were inspected using a JBrowse genome viewer that displays RNA-seq and Ribo-seq data mapped to mycobacterial reference genomes to determine active gene boundaries. The sORFs chosen for study are thought to be physiologically relevant based on their high expression level and conservation within the M. smegmatis genome and across other mycobacterial species. Utilizing targeted mutagenesis protocols, mutant sORFs were created and assayed for a reproducible phenotypic effect. The assays utilized aim to accurately address the function of the synthesized sprotein itself, as well as examining the potential of the sprotein to participate in fundamental cellular processes. Studying sORFs and their encoded sproteins has the potential to provide insight into how they modulate biological functions, and to identify novel functions not previously considered due to their seemingly negligible size. Therefore, a multifaceted approach was developed through targeted mutagenesis and studying the associated phenotype in response to gene mutation and overexpression to address the challenge of determining functional roles for small proteins in mycobacteria.

Frank, Isabella

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Isabella Frank,
Dr. Christopher Imes

Abstract Name: **Racial and gender differences in individual sleep health dimensions among adults with poor sleep and excess weight**

Purpose: To explore the associations between sociodemographic factors and sleep health, both individual dimensions and overall composite score, among adults with perceived poor sleep and excess weight. Context: Sleep health is multidimensional and may vary based on sociodemographic characteristics. Previous research focused on a single dimension of sleep e.g.,. quality or duration. However, it is important to examine overall (composite) sleep health and individual dimensions.Methods: As part of the screening process for a larger study, individuals provided sociodemographic information and answered the RU-SATED questionnaire. RU-SATED is a six-item, self-report questionnaire that assesses the six sleep dimensions (regularity, satisfaction, alertness, timing, efficiency, and duration) through a scale of rarely/never (0), sometimes (1), and usually/always (2). Individual dimension scores were summed to calculate the composite sleep health score. Chi-squared and Oneway ANOVA tests were used to examine differences in sleep health by sociodemographic factors.Results: Participants (N = 52) were predominantly white (n = 38, 73.1%) and females (n = 41, 78.8%). The average age was 43.6 years old (standard deviation [SD] 17.0, range 20-76), and the body mass index (BMI) was 34.4 kg/m2 (SD 5.3, range 27.1-48.4). While composite sleep health scores did not differ by race or gender, results showed that females had better sleep efficiency (P = .009) than males. Also, those who were White had better sleep duration (P = .045) than those who were Black/African American, Asian, or American Indian/Alaska Native. There were no statistical significant differences with regularity, satisfaction, alertness, or timing with either gender or race.Conclusion: This study demonstrated that individual sleep health dimensions can produce differing results based on gender or race. Therefore, it is important to evaluate composite sleep health and individual dimensions when addressing poor sleep health in an intervention.

Franklin, Alyssa

Institution: *GA - Kennesaw State University*

Discipline: Architectural and Interior Design

Author/Contributors:
Alyssa Franklin

Abstract Name: **Playful Learning: The disposition of architecture as the pedagogy**

Education is a vital foundation of a society. The standard of today's school environment is built upon the pedigree of the factory schools from the nineteenth century. However, elementary age children require a flexible, engaging, and creative learning environment that the standard school environment does not provide. Learning is a dynamic and innovative action. Architecture should mirror the learning that it supports through providing spaces that allow for flexibility, engagement, accessibility, and attraction. Children are transformed by the spaces they are in, spaces that will leave lasting impacts on the cognitive development of the children, spaces that can be playful and imaginative for learning. By looking at how play is beneficial in children's cognitive growth and the crucial role that architecture plays in supporting the learning processes, this research aims to explore the architecture of play as a means to support the children's learning processes and cognitive growth. What are design strategies to create architecture that facilitate dynamic learning and pedagogy? What are ways that the physical space can stimulate playful learning through the senses, tactics, and imagination of the children? Constructivist psychological theorists Piaget and Vygotsky argued that children's cognitive development occurs within physical and social environments. In relation to the notion of learning by doing, promoted by Froebel, Dewey, and Montessori - the benefits of learning-by-doing are refined physical motor skills, improved bonding within relationships, confident self-expression, communication, language, greater independence, and creative problem-solving and thinking. Learning-by-play predisposes a child with the practice of learning-by-doing at an early age, curating a life-long impact. Besides researching pedagogical approaches and theories, this research examines examples of successful designs of school for children. Architecturally, learning-by-play allows children to explore their environment freely, enjoying the physical and temporal space through senses and imagination.

Franklin, Jazmyn

Institution: *OK - University of Central Oklahoma*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jazmyn Franklin

Abstract Name: **Understanding Male Student Athletes of Color Perception on Mental Health and Stress**

The college-to-professional league sports pipeline is a breeding ground for stress. Men of color are susceptible to being pulled into this pipeline system. Given the existing intersection between race and gender in athletics, when you combine being a man of color and being an athlete, there is an overwhelming risk for this specific population to experience declining mental health and mental disorders. The purpose of the research is to understand the college-to-professional sport pipeline system and identify athlete-specific and culturally/racially relevant risk factors for declining mental health. I interviewed four athletes of color from different institutions (and I am currently trying to increase my sample size). Iaskeda mixture of demographic and open-ended/closed-ended questions to identify the various areas of stress and gain perspective on mental health. Iobserved each participant for a day to gather a sense of what they experience. I discovered how mental health is affected by a system where college athletics is the “pipeline to the pros”, and how various institutions are advocates for mental health but lack a solid framework that offers whole-person support and considers all aspects of an athlete.My findings shed light on the pressure to do well in sports from a young age up until adulthood. While pressure and stress increase, there are limited mental health frameworks within sports programs specifically to deal with this stressFindings from this research will facilitate the development of frameworks for the psychological needs of athletes, and increase the availability of existing resources.

Franz, Sara

Institution: *NC - Western Carolina University*

Discipline: Education

Author/Contributors:
Zach Collins,
Sara Franz,
Veronica Funes

Abstract Name: **How Gen Z Views Incentive and Productivity in the Context of Continuous Improvement (CI)**

This study examines how Generation Z views incentive and productivity in the context of continuous improvement (CI). Many industries have successfully identified CI factors that have improved overall productivity. However, applying previously found CI factors may not extend the longevity of CI. Continuous improvement is an ongoing improvement of a process, technique, or product that can be judged against its effective use of resources (productivity). As such, the question of what incentives drive a specific population of potential workforce leaders, such as Generation Z, remains. This research aims to identify the factors that impact the support for CI initiatives among college students. Specifically, the study examines how incentives encourage productivity and promote job growth and satisfaction among Generation Z students who concurrently study and work. Two hundred undergraduate junior and senior student participants will complete a survey on whether an educational process (including educational resources), an embedded incentive system, has encouraged productivity both in academics and in their current jobs. The data collected will be run through regression analysis to investigate the relationship between the current incentive system and job environment incentives toward productivity. The results of this study will add to the previous research in understanding the correlation between academic performance and what incentives motivate students to be productive in their studies and their motivation to continue working during their studies. Research on this subject is needed to build a complete understanding of the correlations between undergraduate employment in relation to academic success and workforce productivity orientation in the context of continuous improvement orientation.

Fraser, Joella

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
Joella Fraser

Abstract Name: **Retroactivity of Judicial Override Ban in Alabama**

Alabama consistently has the highest per-capita rate of capital sentencing and one of the highest execution ratesin the United States. This is largely attributed to the fact that Alabama, prior to the 2017 abolition of judicial override in capital sentencing, was one of three states in which the jury's sentencing verdict in capital cases was subject to judicial override (the others being Delaware and Florida), and the only state in which the practice was habitually utilizedin favor of death penaltiesrather than life sentencing. In 2017, United States Supreme Court ruled this practice unconstitutional under the Sixth Amendment, inHurst v. Florida.However, amended Alabama statute does not apply retroactively, andof the 166 inmates currently on Alabama Death Row, 31 face execution as a result of judicial override. The vagueness of Alabama statute does not address whether defendants charged but not convicted prior to the 2017 ruling may still be subject to judicial override in their capital cases. Toprove the unconstitutionality of upholding death sentences resulting from judicial override and of using the practice in any and all cases, this study will: examine to what extent racial bias and political gain influence the practice; evaluatecommonalities amongst aggravating factors and expressed judicial bias; examine the number of Alabama death-row convictions later overturned due to proof of innonence or prosecutorial misconduct; and compare the Alabama statute to relevant Delaware and Florida law. The result will be a legislative proposal to the Alabama Supreme Court and Department of Justice to abolish judicial override in its entirety, to amend the currentAlabama statuteto clearly dismiss of all loopholes permissing the practice, toamend the statute to retroactively apply, andto reverse the sentences of the aforementioned 31 Alabama death row inmates.

Frauenfeld, Sam

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Tiffany Paalman *Sam Frauenfeld* *Christopher Santiago*
Natalie Ford *Lee Watson* *Ian Leiker*

Abstract Name: **The effects of restoration projects on phosphorus concentrations throughout Manitowoc County streams and Lake Michigan**

Phosphorus poses an ongoing challenge to Lake Michigan. Excess levels cause algae blooms resulting in degraded water quality in near-shore waters. As local tributaries serve as important phosphorus sources to Lake Michigan, we analyzed phosphorus levels in two streams in Manitowoc County, WI—Centerville Creek and the Little Manitowoc River.These streams have historically exceeded Wisconsin DNR surface water phosphorus standards of 0.075 mg/l phosphorus. Each stream has undergone restoration near where they enter Lake Michigan in order to slow stream flow and reduce phosphorus loading into Lake Michigan.Each creek showed a different trend in phosphorus concentration along its length.Centerville Creek showed lower phosphorus concentrations within the restoration area compared to the upstream branches, although all significantly exceeded the WDNR threshold. North branch averaged 0.510 mg/L phosphorus, and the south branch averaged 0.430 mg/L.Sites within the restoration project averaged 0.307 mg/L. In contrast, no difference in phosphorus concentration was noted between the upstream and restoration sites in the Little Manitowoc River.This may be because this restoration was more recently completed (2020 vs 2012), or due to the surrounding land use as the Little Manitowoc River runs through the city of Manitowoc, while Centerville Creek goes through agricultural land. However, overall concentrations across the Little Manitowoc River were lower than any of the Centerville sites, with an average concentration of 0.071 mg/L, below the WDNR threshold, and rain events did not increase phosphorus as much as in Centerville Creek. Future work will focus on identifying future sources as well as continued monitoring to evaluate the success of these restorations and inform land use decision-making.

Fredrikson, Mackenzie

Institution: *WI - University of Wisconsin-Superior*

Discipline: Psychology/Neuroscience

Author/Contributors:
Mackenzie Fredrikson

Abstract Name: **Predicting Vape Usage Among Young Adults**

Peer pressure has been demonstrated to be one reason why young adults are using e-cigarettes (Wallace; Roche, 2018). However, there is little research looking into how attitudes of masculine norms might influence personal vape usage. Masculine norms might influence individual's vape usage through peer pressure (Iwamoto; Smiler, 2013). Evidence explains that individuals who follow masculine norms more closely may be more likely to engage in risky behaviors, and using vape products could fall under this category (Iwamoto; Smiler, 2013). This study examined the impact that masculine norms and peers' vape usage have on individuals' personal vape usage. Data was collected from 1 non-binary, 51 female, and 13 male participants (n= 65) attending the University of Wisconsin-Superior and nearby colleges and universities. This study demonstrated that participants' attitudes about masculine norms did not influence personal vape usage. However, along with previous research, this study demonstrated that peers' intention to vape was correlated with participants' potential to vape. Future research could utilize a larger sample size, in which gender is more evenly distributed.

Freed, Madeline

Institution: *PA - Susquehanna University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Madeline Freed,
Lou Ann Tom

Abstract Name: **Detection of Low Concentration of Bifenthrin and Esfenvalerate using Molecularly Imprinted Polymers**

Molecularly imprinted polymers (MIPs) were prepared for selective detection at trace levels of pesticides, including bifenthrin and esfenvalerate. If traces of these pesticides reach environmental waters, even in low concentrations, they may be harmful to aquatic life.The goal is to develop imprinted polymers that can be used either in a solid phase extraction for concentration of eachpesticide from dilute environmental samples, or for direct analysis of the compounds via HPLC. MIPs were prepared in dry chloroform with template (bifenthrin or esfenvalerate), monomer (methacrylic acid), and crosslinker (ethylene glycol dimethacrylate) in the ratio of 1:8:40. The initiator2,2'-azobisisobutyronitrile was added and polymerization was completed by ultraviolet radiation (365 nm) for 24 hours at 6 °C followed by placing polymers in an oven at 80°C for 2 hours. Polymers with no template were also prepared as controls for comparison. Recovery of the template after grinding each polymer was 93.1% for bifenthrin and 25.4% for esfenvalerate, so washing to remove template continues for esfenvalerate. For bifenthrin, the polymers were sieved to collect particles between 38 and 63 µm, which were packed into empty stainless steel HPLC columns for evaluation of their ability to selectively retain the pesticide for which they were prepared. For a first evaluation, acetone was used for comparison of the void time on each column and acetonitrile was used as mobile phase. The polymer showed a slight increased retention of bifenthrin on the test column compared with the control column.Evaluation continues with different mobile phases.

Freeman, Angelina

Institution: *DC - American University*

Discipline: **International Studies**

Author/Contributors:
Angelina Freeman

Abstract Name: **Does Gender Equality Improve Health Outcomes?**

Research on women's role in global health focuses on disparities in women's health, but often overlooks the contribution that women make to improving global health outcomes. In response to this gap in research,this paper proposes to explain variation in health outcomes between countries using gender equality as the primary independent variable of interest. The analysis is conducted through cross sectional large-n style multiple linear regression analysis of national-level data in 74 countries. Health outcomes are operationalized as under-5 mortality rates in 2019, while gender equality is operationalized as gender parity index in secondary school enrollment and percentage women in national government in 2018 and 2017, respectively. This study found that gender equality indicators have a statistically significant relationship with under-5 mortality rates. Plausibility probes using process tracing in Rwanda and Bangladesh indicate that as gender equality indicators improve, health outcomes do as well, despite recent instability and low GDP per capita rates. Possible policy implications of this study include the consideration of women's participation in public health initiatives.

Freeman, Luke

Institution: *GA - Kennesaw State University*

Discipline: **History**

Author/Contributors:
Luke Freeman

Abstract Name: **The New Eden: How Faith and Folklore Shaped Appalachian Culture**

In the region of Appalachia, a confluence of Old-World cultures (mostly Scottish, Irish, Germanic, and British), Native beliefs, and Early Colonial Christianity blend together to create a web of intermingled faiths and beliefs that are able to coexist and thrive well into the modern era. The Appalachian Mountains are not only unique for theirage and biodiversity, but also for the range of faith held by those who call the mountains home. Due to having its feet in both Christianity and animistic traditions, the region has become home to a beautifully unique system of beliefs that make up a wholly exotic way of life compared to the rest of the continent. By combining protestant evangelical beliefs with the Old-World mysticism of its European settlers,as well as Native American traditions and rituals, the mountains host a wide array of peoples who are able to coexist between worlds of spiritualism and biblical faith. Whether it be in Pentecostal churches or in the homes of "Granny Witches", the people of Appalachia search for faith and salvation from different, yet not exclusive, sources. This presentation seeks to examine the historical roots and roles that the concepts of Religious Faith and Regional Folklore play in shaping Appalachian culture and its continued relevance in the lives of Appalachia's population.

Freeman, Melissa

Institution: *AL - Auburn University*

Discipline: Nursing/Health Science

Author/Contributors:
Melissa Freeman,
Pao-Feng Tsai,
Tiffani Chidume,
Meghan Jones,
Teleshia Cooper,
Loren Lankford

Abstract Name: **Evaluation of assessment data collected by nursing staff and assistive personnel in a simulation environment**

Accurate clinical assessment by nursing staff, including nurses, certified nurse assistants (CNA), and unlicensed assistive personnel (UAP), plays a critical role in the early detection of patient deterioration. Obtaining accurate vital sign data, timely documentation, and the implementation of clinical bundle protocols for patient deterioration requires education preparation, clinical experience, and sound nursing judgment. UAP delegated the task of collecting and documenting vital sign data may lack the education and clinical judgment necessary to appreciate the need for accuracy and recognize abnormal findings on a per-patient basis, delaying the implementation of clinical deterioration bundles. Therefore, the objectives of this study are to determine: 1) if vital signs are assessed; 2) if vital sign data is accurate when collected; 3) if vital sign data obtained by licensed nurses has higher accuracy rates than UAP (including CNAs); 4) if there is a potential correlation between the respondent's attitude toward the data and the accuracy of the data collected. We will employ a two-part model to identify assessment techniques and accuracy in a simulated environment, followed by a post-simulation vital sign attitude survey. Part one will utilize high-fidelity mannequins in a simulation environment to assess the method of collection and accuracy of vital sign data collected by licensed and unlicensed nursing staff. Part two will utilize the V-Scale to measure the respondent's attitudes toward vital sign monitoring in clinical deterioration to identify potential knowledge, attitude, and skills deficits.

Fregien, Anna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Anna Fregien,
Mackenzie Davis

Abstract Name: **Effect of Climate Conditions on Leaf Traits in Sunflowers**

Plants are sensitive to their environment and are phenotypically plastic, meaning that individuals are able to adjust their morphology in response to external factors. Thus, patterns of plasticity in plants are great indicators as to how our climate is changing. We are determining the effects of climate conditions, such as precipitation and temperature, on specific leaf traits in 3 species of sunflowers. These effects can help us predict and understand how sunflowers grow and acclimate in response to these climate conditions and help us understand how other plants might also change.We conducted a common garden experiment using approximately 225 plants from three species of sunflowers, Helianthus maximiliani, H. grosseserratus, and H. giganteus, planted at a site in Eau Claire, Wisconsin. We harvested leaves of each plant in July to measure a suite of traits. We focused on specific leaf area, leaf water content, and leaf thickness because these traits are often correlated and all exhibit associations with the amount of precipitation and the temperature of the environment. We are examining how these traits were affected by varying temperature and precipitation rates over the past three years and will determine if variation in trait values may be driven by environmental differences across years. These results will tell us a great deal about how sunflowers and plants in general may respond to climate change.

Frett, Sean

Institution: *IA - Iowa State University*

Discipline: Physics/Astronomy

Author/Contributors:
Sean Frett,
Soeren Prell

Abstract Name: **Analysis of Muons Produced by Electron-Positron Collisions in the Belle II Experiment**

Belle II is an ongoing experiment intended to explain the differing amounts of matter and antimatter in the universe by analyzing the products of high-energy electron-positron collisions in the SuperKEKB collider. The experiment focuses on potential differences in the decay of the B meson and its antiparticle. The SuperKEKB collider accelerates electrons and positrons to appreciable fractions of the speed of light, then slams the particles together at a predetermined interaction point inside a ring of concentric detectors. The high amounts of energy involved in these collisions leads to the formation of new particles rarely found elsewhere, including B mesons and muons. High-energy muons are ideal for calibrating and aligning the detector, and are the focus of this project. The K-Long and Muon detector, or KLM, consists of a “barrel” and two “endcap” sections, which surround the electron-positron beam pipes. These sections are divided into a meshwork of layers and strips, each of which can detect the position of a muon passing through them. This data is compared with extrapolations from the inner detector layers to determine the “efficiency” of different parts of the KLM. A set of histograms made at the beginning of the semester revealed an unexplained gradual falloff in the efficiency of strips in the endcaps. The endcaps contain two planes of strips: one with the strips laying horizontally and one with the strips arranged vertically. In both planes, the strips close to the center of the detector have a higher efficiency than the strips on the outside. This anomaly is not present in simulated data. Through analyzing more data, we hope to determine the source of the anomaly, and to increase the KLM efficiency for muons. Such an improvement would benefit Belle II’s measurements of B mesons, which often involve muons in their decay.

Frey, Angela

Institution: *WI - Alverno College*

Discipline: FAN Abstract

Author/Contributors:
Mikelene Ray *Angela Frey*

Abstract Name: **Enhancing STEM identity among women through participation in community STEM activities: An ecological systems theory approach**

Alverno College is a designated HSI women’s college serving primarily first-generation, and low-income students. Several lines of research strongly support the recommendation that community engagement can increase STEM retention for underserved students (Lozano, Franco, Subbian, 2017; Estrada, et. al., 2016). In addition, Estrada et al. 2016 found that showing students how to creatively link their STEM training to the needs of their communities is an effective strategy for increasing URM students’ success in STEM. We extended this research by applying Brofenbrenner’s model of human development to enhance STEM identity among women STEM majors. Our approach has been to place the individual student in a pro-social STEM community ecosystem to promote development and maintenance of their STEM identity (Miller, 2011). Alverno College’s Truchan STEM Community Impact Program (T-SCIP) program funded by NSF IUSE HSI (award #2122903) applies evidence demonstrating that women and underserved students in STEM are motivated by directly experiencing ways STEM benefits the communities where they live. Specifically, the T-SCIP program provides multifaceted community based activities involving STEM peer mentoring, STEM faculty support, engagement with STEM community partners, the social support communities for the student (such as, family and friends), STEM alumnae, and the STEM professional community. We will report program organization and preliminary findings of the impact Alverno College’s T-SCIP program has on STEM identity, sense of belonging, interest in pursuing research opportunities and graduate school study in STEM. Using a quantitative and qualitative study design, preliminary data suggests participants discuss the benefits of learning from each other, as well as having opportunities to develop personal leadership skills in science. Survey questions indicate participants gained confidence for doing science and being a scientist. We will also report retention and persistence to graduation rates in STEM.

Frey, Charlie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Joshua Katcher *Harry M. Jol* *Zachary Blackert*
Charlie Frey *Paul Hanson* *Clayton Reinier*

Abstract Name: **Stratigraphic Analysis of Paired Vegetated Linear Dunes in the Nebraska Sand Hills Using Ground Penetrating Radar**

There are three models of linear dune formation, and there is no agreement on which theory best explains their formation. The research focuses on the stratigraphy, the internal sediment layering, of the Nebraska Sand Hills' paired linear dunes in north-central Nebraska to determine how the dunes there were formed. Sand dunes are given their shape by wind velocity and sand supply. Therefore, the shape of dunes and the internal layering of sediment within them are indicators of the former wind regimes and dune movements during formation and can be used to determine the correct formation model.
The ground penetrating radar (GPR) data was collected in herringbone-shaped transects centered in the trough between paired linear dunes, extending over the crests. The pattern maximizes the visible internal layering within the dune. Sensors and Software's Pulse EKKO Pro GPR system was used as a non-invasive, high-resolution means of viewing stratigraphy. Topographical data was collected every 2 meters using Topcon RL-H4C laser level. The GPR data was collected using a frequency of 100 MHz antenna frequency, maximizing image depth while maintaining image resolution. The GPR transmitter and receiver were separated 1 meter apart and traces collected every 0.25 meters. The transects varied from 45 meters to 150 meters long. GPS points were plotted at the beginnings and ends of transects to accurately record GPR data locations. Results show some dune stratigraphic layers being superimposed over dune's, which indicates different periods of deposition. This would support a bimodal wind theory over windrift or helical roll vortices theory. The southern dune of the pairs compared to the northern are larger, suggesting two separate formational periods for each dune. Further GPR investigation and Optically Stimulated Luminescence (OSL) dating on sediment cores should be conducted to confirm ages of stratigraphic layers to provide further evidence of our results.

Fricks-Gleason, Ashley

Institution: *CO - Regis University*

Discipline: FAN Abstract

Author/Contributors:
Ashley Fricks-Gleason

Abstract Name: **Increasing access to mentored research and creative inquiry opportunities through the creation of an Undergraduate Research Certificate**

Undergraduate research is a high-impact practice that deeply engages students with the university. In order to stimulate undergraduate research and creative inquiry at Regis University, we created an Undergraduate Research Certificate to officially recognize students who engage in significant, mentored undergraduate scholarly activity. The goal of the certificate is to make research opportunities more transparent and accessible to a diverse student population. While some students arrive at Regis knowing they might like to pursue undergraduate research, many more – especially first-generation college students and historically marginalized populations – do not discover research until they are in college. As such, programs that enroll students in their first semester (e.g. our Honors Program) unintentionally exclude our most marginalized students. This Certificate aims to engage a diverse population of motivated undergraduates in collaborative research or creative inquiry with a faculty mentor by combining research-specific coursework with disciplinary courses and transcripted research credits. A slate of newly-created courses allows for the big-picture research training, teaching of communication skills, professional development training, and vocational discernment to occur within full cohorts. This learning is then supplemented in disciplinary-appropriate ways through individual mentorship pairings. By formalizing the process, the Certificate provides research training, mentorship, and a line on the transcript/CV for students who may discover the joy of research and scholarship later in their academic career, or who may not otherwise fit the requirements (GPA, etc.) for other programs. The addition of the Certificate to our curriculum has provided a novel avenue for students to deeply engage with their faculty. By making this high-impact, valuable experience available to all students who desire to perform undergraduate research, we have lowered a barrier and increased support for some of our most marginalized student populations. This presentation will speak to the lessons learned during the program's initial two years.

Friedman, Lucy

Institution: *CO - University of Colorado at Boulder*

Discipline: Education

Author/Contributors:
Lucy Friedman

Abstract Name: **Safe communities Safe Schools presentation**

Safe Communities Safe Schools (SCSS) is an adaptive model for school safety in community engagement, capacity building, and data-based decision making. This research based model is designed to create a school that promotes social, emotional, and physical safety. Current STOP School Violence funding through the Bureau of Justice Assistance (BJA) has given SCSS an opportunity to work with 40 schools across Colorado. To recruit schools for this partnership, I am supporting the development of a database to share information about the project and assess schools' potential needs (e.g., alignment with current improvement plans, level of state-funded support, culture, and climate data). By April, I will be able to share information about considerations for recruitment of school participants for this kind of project, along with an analysis of potential factors that increase the likelihood of schools' choosing to collaborate. Once schools are recruited, SCSS members will facilitate meetings to identify needs and gaps in school culture, climate, and safety (e.g., information sharing, SEL MTSS, mental health referrals, bullying prevention), using survey tools developed by the SCSS team. Data from these tools will help prioritize needs and develop action plans, and I will complete a comparison of school needs identified during the recruitment process with current local data. In summary, I intend to cover strategies that SCSS relies on to help translate research into practice regarding recruitment, school engagement, existing versus more recent data, and strategies for being responsive and adaptive to unique needs in the school environment.

Friend, Lindsey

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Lindsey Friend,
Payton Oliver,
Bradley Carter

Abstract Name: **Effects of Well Opacity, Well Shape, Length of Light-Dark Stimulus Time, and Larval Age on Zebrafish Larvae Swimming Behavior Development**

Zebrafish are an excellent model organism for high-throughput behavioral analysis. Measuring development of simple behaviors such as swimming can provide insight on underlying neurodevelopment of zebrafish larvae. Dark-induced hyperlocomotion is a common stimulated movement used to assay swimming behavior. Video tracking software allows analysis of swimming patterns in response to cycles of light and dark stimuli in a controlled environment to be conducted. However, the methods used in such zebrafish behavioral studies vary in the literature, and some intrinsic and extrinsic factors have been shown to significantly affect fish behavior. We investigated whether four additional factors (well opacity, well shape, length of light-dark stimulus time, and larval age) influence swimming behavior in larval zebrafish. 5 day post-fertilization (dpf) zebrafish in 96-well plates were exposed to an alternating light-dark protocol and tracked for movement using a commercial motor tracking system (Noldus DanioVision). 5 dpf fish in opaque wells showed higher average velocity compared with 5dpf fish in clear wells. Fish in square wells also showed higher average velocity in all lighting conditions compared to fish in circular wells. Fish exposed to differing lengths of light-dark stimulus time showed no difference in swimming behavior. Varying the age of zebrafish larvae tested also showed no effect on swimming behavior. Our results emphasize the importance of internal normalization per experiment and reporting protocol details to enable informed comparisons between these kinds of behavioral studies.

Friesth, Emma

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Public Health

Author/Contributors:
Sarah Landeau,
Grace Cunningham,
Emma Friesth

Abstract Name: Food Environments and Healthy Communities: An Assessment of the Food Environment on the University of Wisconsin-Eau Claire Campus

The foods we eat are a determinant of health and wellbeing, with nutrition as a key factor in the most prevalent chronic diseases in the United States including heart disease, obesity, and diabetes. Food environments, the physical, economic, and socio-cultural settings that play a role in what people choose to eat, are associated with diet-related health outcomes. In the university setting, campus food environments are an important determinant of what students eat which influences their quality of diet and nutrition status. To examine the food environment at the University of Wisconsin-Eau Claire (UWEC), students enrolled in a course titled “Food Environments and Healthy Communities” measured the availability and accessibility of healthful food options on campus using University of Pennsylvania’s Nutrition Environment Measurement Surveys. In a student-led approach, sampling boundaries were determined to include food outlets on campus and in the surrounding community. Survey data was collected and scored to provide quantitative data regarding the affordability and nutritional value of food fromvending machines, cafeterias, grab-and-go shops, restaurants, and stores. The data gathered will enable researchers to provide evidence-based recommendations to student senate, university administration, and city council, with the overall goal of improving the campus food environment such that students have equitable access to affordable and healthy foods which is key to health, quality of life, and educational success.

Fritch, Justin

Institution: ***IN - University of Evansville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Riccardo Di Domenico Di Domenico *Justin Fritch* *Brendon Herrin*
Nick Gibson

Abstract Name: Variations in System Parameters at Low Energy Input on Thermosiphon Collector Efficiency

A thermosiphon is a system of components that passively generates a closed cycle of flowing water wherein solar energy is stored as useful thermal energy. Systems used in real-world applications contain no mechanical or electrical components, making it useful in areas lacking capable infrastructure. Flow starts in the collector by heating the water, decreasing its density, and creating a buoyant force, which drives the fluid through a hot leg pipe into a raised tank. This heat contained in the tank could be extracted for domestic hot water heating or building supplemental heating applications. The water cools, increasing its density, and sinks down the cold leg pipe and re-enters the collector where the process continues cyclically. Thermistors, located at the collector inlet and outlet pipes, measure system temperatures and an open-bore flowmeter measures flow through the system. During steady-state, a period where flowrate, inlet and outlet temperatures remain relatively constant, collected data is used to calculate the instantaneous efficiency of the system. The discreet efficiency values are then used to calculate overall efficiency. Components of the system allow the ambient temperature around the device to be controlled, a parameter overlooked by most thermosiphon research projects. These components include insulated, removable walls enclosing the device, a fan to circulate the air inside the enclosure, and a space heater and AC unit to control the temperature. Previous research has used high-power input to the collector simulating sunny-days, but current research conducted low-power tests simulating cloudy-days to compare trends across both conditions. The base parameters that are varied and researched are collector angle, hot leg height, cold leg height, hydraulic resistance, and input power. By conducting a range of diverse test series, each investigating the effect of altering a single parameter, the team explored the effects of each system parameter on overall efficiency trends.

Frith, Ashley

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ashley Frith,
Salvador Lopez,
Jennifer DeBerry

Abstract Name: **Mapping of spinal dorsal horn interneurons associated with the lower urinary tract in mice**

Precise coordination between sensorimotor systems of the lower urinary tract (LUT) is required for normal micturition function. To date, the intraspinal circuitry of the lumbosacral spinal cord (SC) with respect to regulating the LUT remains unclear. Interneurons (INs) within the dorsal horn of the SC receiving input from urinary bladder (BL) primary afferent neurons are critical to the coordinated, but opposing, function of the LUT (e.g., BL detrusor and external urethral sphincter). An increased understanding of how IN circuitry changes in the context of LUT dysfunction, particularly spinal cord injury, would enhance the development of therapeutic strategies for functional recovery. The goal of this study was characterizing the location and number of SC INs receiving input from BL afferent neurons. GFP-conjugated pseudorabies virus (PRV-512; CNNV, Princeton University) was microinjected into the BL wall (10 ul total volume in 3-4 sites) of anesthetized male and female C57Bl/6 mice (JAX). At either 3, 4, or 5 days after injection, animals were humanely euthanized and lumbosacral SC tissue was harvested and processed for immunohistochemical labeling of PRV-512 and photographed (Leica LMD6 and DFC3000G). Transsynaptically labeled SC INs were identified and quantified using a thresholding strategy in NIH ImageJ and Adobe Photoshop, focusing on what were thought to be primary INs making direct synaptic contact with afferent axonal input. Results demonstrated that day 4 was optimal for PRV-512 visualization in the lumbosacral SC, the L6 superficial dorsal horn contained the most primary INs, and that the L6 dorsal commissure contained the fewest primary INs. These results suggest IN population discrepancies in rat and mouse SC architecture within LUT-associated regions.

Frodl, Maya

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Maya Frodl,
Saige Tichy,
Lauren Glenna,
Tatiana Bobrowicz,
Sophie Gardiner

Abstract Name: **3D Printing to Improve Patient Outcomes for Mini-Thoracotomy Aortic Valve Replacements and Mini-Mitral Valve Repairs**

Aortic valve replacement (AVR) was established in the 1960's and has become a routine therapy to treat patients with severe aortic valve dysfunction. AVR is usually performed using a full sternotomy and cardiopulmonary bypass support. Since the late 1990's, minimally invasive procedures have been developed for aortic valve surgeries, such as the mini-thoracotomy AVR. These less invasive procedures claim reduced postoperative complications, shorter lengths of stays in the hospital, and lower mortality. However, the minimally invasive nature may provide challenges in the viewing of patient anatomy during the procedure. This project will provide the 3D printing capabilities needed to investigate if using 3D printed anatomical models for pre-operative planning and/or patient education will result in better patient outcomes for mini-thoracotomy AVR surgery, particularly in those with thoracic abnormalities. For selected patient cases, the Mayo Clinic Luther Campus will provide UWEC researchers with DICOM files for segmentation and 3D printing. The UWEC research team will perform the segmentation and provide the physical 3D anatomical model with initial feedback on accuracy from Mayo physicians. Ultimately, the Mayo Clinic collaborators will evaluate the effectiveness of using the 3D models in patient outcomes as well as patient education on the procedure.

Fuentes Brock, Benjamin

Institution: *VA - George Mason University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Benjamin Fuentes Brock,
Mehdi Amiri

Abstract Name: **Effects of Stress on Corrosion Behavior of Additively Manufactured 316L Stainless Steel**

Laser powder bed fusion (LPBF) additive manufacturing (AM) is a relatively new manufacturing method in which metal parts are manufactured layer-by-layer through rapid heating and cooling of the powder bed. Consequently, complex geometries can be produced to simplify assemblies and reduce material wastage. These benefits make adopting additive manufacturing enticing, however mechanical and electrochemical properties of AM metals are significantly influenced by their unique microstructural and defect features that are highly dependent on the build parameters. In this paper, we will investigate the interplay between mechanical and electrochemical effects on additively manufactured stainless steel 316L (SS316L). Tests are designed to perform corrosion characterization on AM coupons in stressed and stress-free conditions. Corrosion properties such as pitting potential, corrosion potential, and corrosion current density will be characterized under both stress conditions. Results of the AM samples will be compared with the results of the wrought SS316L to understand the effects of microstructure and defects on corrosion properties. Conclusions will be made about how significant the impact of additive manufacturing is on key properties of this material and if there are any relevancies to its microstructural characteristics. This increase in insight will reveal how to implement AM SS316L safely so its previously mentioned benefits can be realized when appropriate.

Fuge, Zachary

Institution: *VA - Virginia Tech*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Zachary Fuge

Abstract Name: **In-House Development of Sensor and Motor shields for Utilization on Robotic Systems**

In this work, the low-level (LL) hardware for sensor collection, motor input, and networking with a high-level (HL) controller is presented for robot systems which utilize linear series elastic actuators (LSEAs) for joint actuation. In multi-joint robotic systems, LL controllers rely on sensor readings to control each joint and communicate the obtained information to the HL controller. This research outlines the hardware design of two printed circuit boards (PCBs), as well as the use of an EasyCAT PRO board for communication. An in-house sensor interface shield is designed as an extension of the TM4C123GXL TIVA microcontroller launchpad and another in-house shield connects to the AZBDC12A8 analog servo drive, or rather, the motor controller. These PCBs allow for sensor integration with circuits that route, filter, or manipulate data obtained from the sensors. The goal of the sensor interface shield is to interface between sensors and the microcontroller. The sensor board takes readings from a force sensor, absolute encoder, quadrature encoder, as well as adjusting the pulse-width modulation (PWM) signal that is sent to the motors. The sensor shield also includes Controller Area Network (CAN bus) capabilities to allow for additional sensors to be included. The main purpose of the motor shield is to supply power, route the PWM input, and filter the current output of the motor. The final designs for both the shields are built in the PCB design software Eagle. Overall, these boards will allow for better sensor integration for LL controllers which interface with LSEA driven multi-joint robotic systems.

Fullen, Keelin

Institution: *AR - Arkansas State University*

Discipline: Communication Science and Disorders

Author/Contributors:
Keelin Fullen

Abstract Name: COMMUNICATION DISORDERS GRADUATE STUDENT SKILLS IN THICKENING LIQUIDS

Previous research has reported inconsistent and inaccurate production of thickened liquids used as a treatment for those with dysphagia,which can have major health implications for individuals who ingest these liquids. The International Dysphagia Diet Standardisation Initiative has been created to help provide consistent terminology and a method for testing these liquids, but the liquid production and use of this method by future speech-language pathologists (SLPs) must be examined to ensure the liquid range is accurate and that they use proper protocols. This research examined 16 graduate students to determine the effect of clinical placements that required them to thicken liquids on their performance of this task. This study also examined confidence levels and familiarity with IDDSI to determine their effect on liquid performance. The examination included an analysis of the classification of the level of thickened liquid and the procedures associated with production. Overall, this study found that there was no association between clinical placement and the performance of two thickened liquid tasks. This study also found that the majority of participants (80% forMildly Thick; 66% forModerately Thick)did not prepare a liquid that was the directed consistency. In addition, no participant correctly used the IDDSI flow test. The researcher informally observed delayed application of gloves or incorrect attempts of the IDDSI flow test.Ultimately, these future SLPs areexpected to correctly thicken liquids that follow their swallowing course, so it can carry over to future clinical practice as a speech-language pathologist. These results indicate that changes or improvements should be made to the thickened-liquid education and training received by graduate students at the university.

Funderburk, Kyri

Institution: *OK - University of Central Oklahoma*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ryan Glazier,
Kyri Funderburk,
Matthew Plant

Abstract Name: Development of a Wound Infection Detection Device

An infection within a wound is a devastating circumstance that can potentially turn a simple graze to a multi year long healing process. The latest methods for wound infection detection are cumbersome and time consuming. These practices often need to undress the wound and leave it exposed for a few seconds or up to an hour. Undressing a wound is counterproductive to the healing process and this small window of exposure can possibly result in an infection in itself. There is a need for a tool that allows for active infection detection that causes very little to no compromise to a wounds healing environment. The device we propose is placed amongst the gauze whenever a wound is initially dressed and implements an array of sensors to collect a wide range of data. The type of data we plan to collect is pH, pressure, moisture, and temperature. We also want to have an integrated RFID or WIFI module so that this data can be wirelessly collected from the device. The specific methods involved for this developmental project start with designing and testing the responses of multiple sensors in an infected wound environment compared to a healthy environment. This is done so that a reference point can be made when a healthy wound transitions to an infected wound. Currently, progress is being made towards gathering preliminary data and calibration of our sensors for our design. Although the project is still in its early stages, It will be beneficial to observe the outcomes from the system in simulated wound environments to provide a baseline for further research and applications.

Funes, Veronica

Institution: *NC - Western Carolina University*

Discipline: Education

Author/Contributors:
Zach Collins,
Sara Franz,
Veronica Funes

Abstract Name: **How Gen Z Views Incentive and Productivity in the Context of Continuous Improvement (CI)**

This study examines how Generation Z views incentive and productivity in the context of continuous improvement (CI). Many industries have successfully identified CI factors that have improved overall productivity. However, applying previously found CI factors may not extend the longevity of CI. Continuous improvement is an ongoing improvement of a process, technique, or product that can be judged against its effective use of resources (productivity). As such, the question of what incentives drive a specific population of potential workforce leaders, such as Generation Z, remains. This research aims to identify the factors that impact the support for CI initiatives among college students. Specifically, the study examines how incentives encourage productivity and promote job growth and satisfaction among Generation Z students who concurrently study and work. Two hundred undergraduate junior and senior student participants will complete a survey on whether an educational process (including educational resources), an embedded incentive system, has encouraged productivity both in academics and in their current jobs. The data collected will be run through regression analysis to investigate the relationship between the current incentive system and job environment incentives toward productivity. The results of this study will add to the previous research in understanding the correlation between academic performance and what incentives motivate students to be productive in their studies and their motivation to continue working during their studies. Research on this subject is needed to build a complete understanding of the correlations between undergraduate employment in relation to academic success and workforce productivity orientation in the context of continuous improvement orientation.

Furney, Alexandra

Institution: *GA - Georgia College and State University*

Discipline: Biology

Author/Contributors:
Alexandra Furney,
Brittany Benner,
Jin Yeong Kim,
Arnab Sengupta

Abstract Name: **Role of Regulatory mRNA Structures in the Expression of Cancer-Related Genes**

Messenger RNA (mRNA) translation, the synthesis of proteins based on genetic code, is an essential process in gene expression. Translation is often inhibited when cells are under stress, but there are mechanisms that allow certain genes to bypass stress-induced inhibition. Prior studies have identified a list of genes that disregard stress signals to continue mRNA translation using regulatory RNA structures to hijack the translational machinery. We hypothesize that stress-signals must alter the RNA structure to trigger structure-mediated mRNA translation. Our target genes include oncogenes HIF1A, FGF2, and tumor-suppressor gene TP53. We aim to amplify regulatory mRNA regions previously reported for each gene from A549 lung carcinoma cell lines. Next, we will build and compare structure models for regulatory regions under three conditions: (a) cell-free, (b) in-cell unstressed, and (c) in-cell stressed. For structure modeling we use SHAPE-MaP, a chemical-probing strategy analyzed using next-generation sequencing (NGS). We have successfully extracted, probed, and amplified the target regions using gene-specific primers, reverse transcription (RT), and polymerase chain reaction (PCR). We analyzed PCR products using gel electrophoresis. Here we describe our experimental workflow along with data from NGS library preparation. Applying NGS using the Illumina MiSeq platform on target mRNAs, we will build RNA secondary structures with Shapemapper2 and SuperFold software packages. Our long-term goal is to describe structure-based mechanisms by which translation of cancer-causing mRNAs can be blocked, and how translation in cancer-fighting mRNAs can be reengaged.

Furr, Rachel

Institution: *VA - Virginia Commonwealth University*

Discipline: English/Linguistics

Author/Contributors:
Rachel Furr

Abstract Name: **The Apple Doesn?t Fall Far from the Tree: an Examination of the Mother-Daughter Relationship in 2000's Sitcoms**

In modern television, there has been an increase in the tension between mother and daughter both in the real world and on television. This representation must be studied to better understand both its origin and effect on said relationship as a whole. To research the portrayal of the mother-daughter relationship on modern sitcoms, I examined the complexity of this relationship with post-second wave feminism ideals in modern sitcoms and compared the factors leading to a beneficial relationship and a toxic one. Research suggests that strong mother-daughter relationships follow a more traditional pattern, where a daughter accepts her mother's lifestyle as a viable path and chooses to model hers after it. It also suggests that weak mother-daughter relationships can follow a more modern pattern where a daughter tries to forge her own path and abandons the typical cycle of mimicking one's parents. With this in mind, the relationship between mother and daughter is psychoanalyzed in both Jane the Virgin (2014) and Arrested Development (2003), and the two opposing relationships are compared in order to better understand what specific social factors contribute to the differences. From Jane the Virgin, I found that the main factor contributing to a healthy mother-daughter relationship is the daughter's ability to learn from her mother's mistakes and communicate with her mother in order to utilize maternal wisdom. From Arrested Development, I found that toxic mother-daughter relationships stem from the refusal of mother's advice by the daughter, where the mother creates an unsafe or unpleasant environment around the daughter, leading the daughter to reject maternal wisdom. It is necessary for those that value familial relationships in third-party contexts, such as television, to understand what differentiates healthy and unhealthy relationships to be able to assess their own mother-daughter relationships and implement strategies for improvement where necessary.

Gabrielsson, Elias

Institution: *VT - Norwich University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Mercedes Bishop *Helene Sisti* *Elias Gabrielsson* *Annika Beebe*

Abstract Name: **Exploring the Contextual Interference Effect Using a Bimanual Coordination Task**

Stroke, amyotrophic lateral sclerosis (ALS), and other movement disorders result in loss of upper limb function, thus impairing bimanual coordination. Motor imagery is an effective clinical intervention for accelerating recovery; however, the cognitive and neurophysiological parameters that inform effective strategies remain elusive. The study aims to explain the neural dynamics that underlie bimanual coordination during real and imagined movement. Healthy young adults (n=13) learned a visuomotor tracking task using either one or both hands in a single session. Two dials control the movement of an on-screen cursor. The left and right dials correspond to vertical and horizontal cursor movement. The participants were tasked with tracking a moving target using the left and right dials with the appropriate speed and direction. Before the session, each participant was fitted with a 40-channel EEG cap (Compumedics, Neuroscan). Two phases were tested: unimanual and bimanual control. The first phase consisted of unimanual control using the left hand to draw a vertical line and the right hand to draw a horizontal line. The second phase consisted of bimanual control in a 3:1 pattern followed by a 1:3 pattern. The pattern notation represents the ratio of left-hand turns to right-hand turns. Trials were 10 sec in duration, elapsed time from target origin to target endpoint; the intertrial interval (ITI) was 5 sec. Each trial block was followed by a mental imagery condition (MI) where participants were asked to imagine performing the task they had just completed with their eyes closed. Mental chronometric data were collected, and vividness ratings were assessed by self-report immediately after each trial block. The results indicated learning in a single secession; [F(1,10)=19.43, .001]. EEG analyses of active vs. rest conditions, and real vs. imagined conditions, are underway. These results may inform neurorehabilitation strategies for patients recovering from movement disorders (upper limbs).

Gafill, William

Institution: *AZ - Northern Arizona University*

Discipline: **Environmental Studies**

Author/Contributors:
William Gafill

Abstract Name: **The Ethical Flaw of American Conservation Theory**

American environmental conservation is typically associated with the 'progressive' era and the likes of Theordore Roosevelt, Gifford Pinchot, and John Muir. The aforementioned figures are all remembered for their parts in setting aside large amounts of land for the benefit of the public as opposed to the private land owner. In the words of Pinchot, the first U.S. Forest Service Chief, "conservation means the wise use of the earth and its resources for the lasting good of men." While setting aside large swaths of land for the purposes of public interest has beneficial impacts on the environments that are conserved, the intention is to benefit humans rather than the animals or the general ecosystem in question. In turn, this creates an ethical dilemma in which beneficial effects occur from an ethically and morally skewed philosophy. It could be argued that conservation should take place as it is society's responsibility to regenerate habitats and ecosystems that are affected by human activity such as pollution, deforestation, and climate change. While the old adage 'if it's not broken don't fix it' often impedes change, there is a clear flaw within domestic conservation theory as the American landscape is still both decimated and conserved for human benefit. Although past theories of conservation act as guidelines for present activity, the issues of drought, wildfires, and other human attributed disasters display that the current system is not perfect and is in need of alterations. That being said, if locations are set aside for non-human reasons, the general public will still receive the benefits of an environment-first conservation theory through the ability of visitation and increased safety from natural disasters. A conservation theory that emphasizes environments and ecosystems before public benefit has the potential to create a more sustainable country as a whole.

Gagliano, Madeleine

Institution: *VA - George Mason University*

Discipline: **Biology**

Author/Contributors:
Madeleine Gagliano *Monique Van Hoek* *Wendy Strangman*

Abstract Name: **Screening Marine Extracts for Antibiotic Potential against Staphylococcus aureus and Methicillin-Resistant Staphylococcus aureus**

Antibiotic resistance is a public health emergency that continues to worsen due to the misuse of existing medications and the lack of novel treatments. A potential source for new antibiotics is marine environments. Marine soil and bacterial extracts seem to be promising in their ability to fight human bacterial pathogens, including those that have evolved resistance. For this screening, extracts were prepared using organic solvents from the secreted products of marine bacteria by the UNCW Drug Discovery Lab. They were then sent to the van Hoek lab to test for antibiotic potential against dangerous bacterial pathogens, specificallyStaphylococcus aureusand the methicillin-resistant strain (MRSA). The antibiotic potentials of the marine extracts were determined through Kirby Bauer assays and Minimum Inhibitory Concentration (MIC) assays. In the Kirby Bauer assays, the zones of inhibition for each extract were compared to the zones created by the negative control (blank disk) and positive control (cefotaxime) to see if there was any antibiotic activity. This was done for bothS.aureusand MRSA for a total of 13 compounds. DSK-226 was determined to be the most promising hit for bothS. aureusstrains, with zones of inhibition of 26.5mm (S.a) and 8mm (MRSA). A MIC assay was performed to determine the concentration at which the extract could effectively be used. A precise MIC value could not be determined, indicating that the minimum inhibitory concentration is 64 ug/ml. A more concentrated sample would be needed to precisely determine the MIC. Of additional interest, a thickening in bacterial culture was observed during this test. Ultimately, one extract, DSK-226, was identified that was able to inhibit growth of S. aureus and methicillin-resistant S. aureus. This suggests the potential of identifying a new antibacterial compound in the extract mixture with further fractionation and study.

Gagner, Brady

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Physics/Astronomy

Author/Contributors:
Brady Gagner

Abstract Name: **The Development of ZnO Ultraviolet All-Optical Switches**

The pursuit of faster communication has driven the development of new optical communication components, such as all-optical surface-normal switches constructed of semiconductor thin-film heterostructures. In such a device, strong control pulses and weaker signal pulses are spatially overlapped in the thin-film heterostructure and tuned to the band edge of the active semiconductor layer. The control pulse modulates the transmission of the weaker signal pulse by altering the absorption properties of the semiconductor. Zinc oxide (ZnO) is a promising switching material for all-optical switches that operate in the ultraviolet (UV) spectral region. It has a bandgap in the UV spectral region (~3.4 eV) and is less toxic than other materials with similar bandgaps, such as gallium nitride (GaN). The structures we are studying are thin, polycrystalline heterostructures composed of alternating layers of ZnO and zinc magnesium oxide (ZnMgO), where the ZnO serves as the active semiconductor layer. Our structures are grown by DC sputter deposition. In my presentation, I present the results of experiments that demonstrate control-induced modulation of 120-ps signal pulses using ZnO/ZnMgO heterostructures with varying layer thicknesses. I will show how the modulation varies depending on the energy of the control pulses and the time delay between the control and signal pulses. Moreover, I will discuss the physical mechanism that is responsible of the modulation.

Galan, Itzel

Institution: *TX - The University of Texas at San Antonio*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Itzel Galan *Marissa Wechsler* *Jordyn Wyse*

Abstract Name: **Investigating the Biocompatibility of Poly(N-isopropylacrylamide)-based Nanoparticles**

Poly(N-isopropylacrylamide) (PNIPAM) hydrogels are thermoresponsive polymers which exhibit a lower critical solution temperature at approximately 31°C. The dramatic swelling and collapsing behavior of such stimuli responsive polymers enables them to be used for various applications in tissue engineering, drug delivery, and biosensing.For this reason, PNIPAM nanoparticles were synthesized using a precipitation polymerization. Briefly, N-isopropylacrylamide and N,N'-methylenebisacrylamide were combined in a round bottom flask with water, purged with nitrogen, and heated to 70°C. Then, the solution was initiated with ammonium persulfate and left to react for 4 hours, after which the nanoparticles were purified by dialysis, lyophilized, and stored at room temperature for future use. The nanoparticles were characterized using dynamic light scattering to determine their zeta potential, polydispersity, and hydrodynamic diameter. After successful synthesis and characterization of PNIPAM nanoparticles, the materials were evaluated for their biocompatibility. Specifically, murine fibroblasts were cultured under standard cell culture conditions in standard growth media and exposed to varying concentrations of nanoparticles (0.25-1.0 mg/mL) for up to 24 hours. Controls were cells cultured in parallel under similar conditions but not exposed to nanoparticles. At the prescribed time point, cell viability was determined using the CellTiter 96 Aqueous One Solution Cell Proliferation assay. Dynamic light scattering results revealed that in 0.1X PBS PNIPAM nanoparticles are slightly negative in surface charge, monodisperse, swollen at room temperature, and collapse at body temperature. Cell viability results under the conditions tested revealed >75% viability under all nanoparticle concentrations examined. The results obtaineddemonstrate the potential of these nanoparticles to be used for various applications in tissue engineering, drug delivery, and biosensing.

Galarza, Jesus

Institution: *FL - Miami Dade College*

Discipline: Mathematics

Author/Contributors:
Jesus Galarza

Abstract Name: **Atomic decomposition of partitions and the Cayley's formula**

A partition Pof a finite nonempty set Xis a collection of disjoint nonempty subsets ofX, called theblocks of the partition, whose union is X.The set of all partitions of the set X, denoted by Par(X), is endowed with the refinement of partitions. The partitionP is said to refine the partitionP' ifand only ifevery block ofP' is the union of some blocks ofP. If a partitionP refines P', then we say that Pis finer than P', or, equivalently, P' is coarser than P. For any partitionsP and P'there are partitions that are refined by both. The finest partition that satisfies this property iscalled the join ofP and P'. The partitions of X that cannot be but trivially decomposed as the join of other partitions of X are called the atomsof Par(X).It is well-known that every nontrivial partition P of X admits a decomposition into atoms.An atomic decomposition of a partitionP is a subseta(P)of atoms ofPar(X) whose join results in P. An atomicdecomposition of a partitionP is said to be minimal if it contains no other atomicdecomposition of a partitionP strictly.We investigate the function NfromPar(X) to the nonnegative real numbersthat assigns to every partitionPof X the number of minimal atomic decompositions of P. An analytical expression forN is given, as well as various interesting properties that describe its behavior in a great extent. We prove a strong relationship between thenumber of minimal atomic decompositions ofpartitions and the Cayley's formula for labelled graphs.

Galeazzi, August

Institution: *WI - University of Wisconsin-Stout*

Discipline: Sociology

Author/Contributors:
August Galeazzi

Abstract Name: **Field of Study Stereotypes: Are They a Reality?**

This project examines whether the stereotypes about people in specific fields of study reflect actual demographics within those majors, and data was collected by surveying and interviewing UW-Stout undergraduate students. The variables I looked into are gender, race, political affiliation, potential salary, parents' occupation, parents' level of education, and how these variables overlap. I asked students to indicate what they believe to be true about the demographics of majors such as the breakdown by gender and race, the typical political views of people in those majors, and to what degree students choose those majors based on salary. I analyzed the data by comparing views about major demographics to actual demographics, and by asking students about their own major and how they are feeling about the stereotypes associated with their major. Results show that perceived stereotypes closely align with the actual demographics and views of students within college majors.

Galindo, Miriam

Institution: *TN - Columbia State Community College*

Discipline: **Biology**

Author/Contributors:
Miriam Galindo,
Elvira Eivazova

Abstract Name: **Exploring the effects of tRNA-carrying mycobacteriophages on Mycobacterium tuberculosis infection**

Multi-drug antibiotic resistant bacteria represent a serious worldwide health-related problem. As a consequence, many types of bacterial infections in the human population are becoming increasingly difficult to treat with antibiotics. The use of bacteriophages, also called phages, brings hope and many advantages, as phages infect only bacteria and are generally harmless to people. The goal of our study was to characterize cluster A mycobacteriophages that infect various mycobacterial hosts, including Mycobacterium tuberculosis. Cluster A, which contains mostly temperate viruses, is the largest cluster of phages published to the NCBI GenBank database. Cluster A is divided into 20 sub-clusters with the largest, A1, containing 189 members. The total number of discovered phages in the A cluster is currently reported as 727. These bacteriophages have relatively large genomes with 90.5 genes and 1.5 tRNAs per genome on average. The phages utilize either lytic or temperate life cycles, with the temperate phages being able to integrate their DNA into the bacterial host as a prophage. We comparatively analyzed the 471 sequenced genomes of mycobacteriophages in accordance with their shared gene content and the occurrence of tRNA genes in their genomes. We found that thirty-two tRNA genes, coding for four amino acids, were observed among cluster A phages. These data support the notion that the presence of tRNA genes in mycobacteriophage genomes is beneficial for successful phage infection via down-regulation of host transcription, enhancement of phage replication and expansion of its ability to infect a broader range of hosts. We conclude that phages which carry tRNA genes make better candidates for the successful infection of M. tuberculosis for the purpose of combating antibiotic resistance in these bacteria.

Galoustian, Isabela

Institution: *GA - Emory University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Isabela Galoustian,
Alexander Vera,
Joshua Robinson

Abstract Name: **Effective intercalation of 2D-Bi on an epitaxial graphene and silicon carbide interface**

Previous research has demonstrated the energy saving potential of quantum spin Hall materials due to dissipationless spin current characteristics. While efforts to stabilize such materials as 2D-Bi have been achieved through intercalation of epitaxial graphene on silicon carbide, growth is limited to nanoscale regions not effective for energy saving devices. This project aims to establish a process property relationship for larger scale, uniformly intercalated 2D-Bi through confinement heteroepitaxy applicable to device function. This process was optimized through adjustment of temperature, H:Ar gas flow ratios, and growth time, and results were analyzed through Raman spectroscopy, scanning electron microscopy (SEM), and x-ray photoelectron spectroscopy (XPS). It was found that maximum intercalation of Bi while minimizing extraneous Bi2O3 occurred at 900° C and 4% H2 to Ar at 500 Torr. Next steps include transmission electron microscopy (TEM) characterization of nanoscale sample structure.

Galura, Austin

Institution: *UT - Utah State University*

Discipline: **World Languages**

Author/Contributors:
Austin Galura

Abstract Name: **Contesting Confucian Moral Paradigms in Seventeenth-Century China: A Study of Idle Talk Under the Bean Arbor**

The story Idle Talk Under the Bean Arbor is a collection of stories by the late Ming dynasty writer Aina Jushi (Aina the Layman, whose actual name is not known). Characterized by its novel narrative framing and storytelling strategies, the text boasts unconventional perspectives on paragons in heroic tales and orthodox values of the time period. In this collection of twelve chapters, participants act as both storytellers and audience members, bringing with them a diverse range of age, experience, and perspectives. This essay examines the author's capitivating strategies in creating this multi-layered and multi-perspectival retelling of classic tales by drawing from vernacular traditions. As a result, one cannot be too sure if this unidentified author could have been the sole penman of this story. Although that is a separate possibility to discuss, another one would be the idea that this narrative framing and storytelling set a precedent in the form of written works and their ability to spread information and ideas in imperial as well as modern and contemporary China. Additionally, I examine how the text challenges the conventions and traditions of their time and revolutionize the status of the common civilian to a degree. Through the use of unique setting, diverse narration methods, and directing the audience through morally ambiguous situations, the author of Idle Talk was able to shed new light onto a previously insignificant tradition of storytelling and comradery among the common folk of 17th century China. And this influence expanded into modern times as well.

Galvan, Pedro

Institution: *TX - St. Edward's University*

Discipline: **History**

Author/Contributors:
Pedro Galvan

Abstract Name: **Secession in Texas: Division Amongst the People**

In early 1861, following the election of Republican Abraham Lincoln, a special Texas convention voted overwhelmingly, 166-8, to secede from the Union. Yet, the decision to secede was more contested than it appears. This research analyzes the ideas of leading secessionists and anti-secessionists who tried to influence the state in making that decision. Methods used to conduct this research were analysis of primary sources such as letters, speeches, newspapers, and documents from events and individuals during secession. Secondary sources were also analyzed that included books, articles, and academic journals about events and specific groups of people in Texas. Results indicate that secessionists in Texas, like most other states, used speeches, letters, clubs, and newspapers to motivate citizens to withdraw. However, it was found that Texas secessionists also used fear to bring the vote in favor for secession. With a population consisting primarily of Whites, Blacks, Germans, and Tejanos, secessionists ultimately succeeded as Blacks had no rights, and both Germans and Tejanos were in fear of persecution. Moreover, spreading narratives of possible uprisings from anti-secessionists, the abolishment of slavery, the destruction of states' rights, and desegregation instilled fear in White Texans causing them to feel resentment towards the already prosecuted anti-secessionists. For this reason, it is believed that the scare tactics employed by secessionists is what ultimately influenced voters to opt for the secession of Texas.

Gamble, Deja

Institution: *FL - University of West Florida*

Discipline: Theatre and Dance

Author/Contributors:
Deja Gamble

Abstract Name: **Wishful Thinking: An Original Play for New Audiences**

The exploration of new age performing arts has begun with the introduction of innovative theatre that challenges audiences to observe stories in an unique style and format. The presenter wishes to stage and perform the original written play, Wishful Thinking, to inspire new audiences to reach towards a hardly touched part of theatre named the fantasy realm. This realm allows audiences to perceive mythical realities and feel the essence and energy manifested by the production in a stage setting. Fantasy is a genre rarely ever explored in straight plays due to the technical limits and directorial interpretations of the production crew. However, the script Wishful Thinking allows the production to ether be inexpensive or upscale because the essence of the fantasy realm lies within the written lines and the actors as the spoken word of the fairiesalgins with the fantasy world they live in. The performance will be approximately 10 minutes performed by UWEC actors, featuring a scene of a flower fairy, Ollie Petal, and a human, Holly Nova, who have a conversation about their own struggles of finding out who they are now and who they will be in the future. The setting is Holly's dream state, a lost garden with an abandoned burned down house and a graffitied wall expressing her inner struggles with coming out. Ollie enters in torn up clothing matching the wall with beautiful wings on his back. The cast requires Holly's appearance be closer to high school age while Ollie's appearance is closer to graduate college age.

Gann, Taegen

Institution: *TN - Trevecca Nazarene University*

Discipline: History

Author/Contributors:
Taegen Gann

Abstract Name: **Immigrant Communities in the Urban Reconstruction Era South**

This research paper aims to uncover and analyze the experiences of European women who immigrated to the southeastern United States during Reconstruction. Specifically, it focuses on the experiences of German, Irish, and British immigrants to Nashville and other southern urban centers. Nashville will act as a case study as similar patterns of immigration occurred in several of the major cities in the South. In the 20 years between 1860 and 1880, the percentage of the United States population that was foreign-born rose from 13.2% to 15.6%. This represents an increase of over two million people. The United States was perceived internationally as a land of opportunity, and the Reconstruction South needed low-wage workers to compensate for the labor of the millions of previously enslaved Black and Brown individuals. Directly after the Civil War, plantation owners pushed for immigration to the South in order to fill the need for agricultural workers, and in 1866, state-subsidized immigration campaigns picked up heavily. The majority of immigrants were not interested in the agricultural work the post-war South offered; some were even warned to stay away from the back-breaking work of the agricultural industry in the South. In turn, the Reconstruction Era South received a disproportionately low number of immigrants compared to the rest of the country. European immigrant women found work in the urban setting as maids, seamstresses, and domestic servants. Immigrants tended to settle in communities made up primarily of other people from their home country. This resulted in ethnic enclaves such as 'Black Bottom,' Edgehill, and Germantown. This research utilizes census records, death and marriage certificates, immigration records, newspapers, city-planning documents, and official immigration pamphlets put out by the southern states to uncover and analyze the experiences of immigrant women in the urban Reconstruction Era South.

Ganser, Olivia

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Macy McCormick *Olivia Ganser* *Magdalana Trilling*
Rebecca Jarzynski

Abstract Name: Preparing Communication Disorders and Sciences Students to Collaborate with Interpreters: The Power of Interdisciplinary Experiences

Nearly 25% of children in the United States currently speak a language other than English at home (Ann Casey Foundation, 2022). Despite the clear and compelling need for competent and linguistically responsive assessment and intervention practices, practicing speech language pathologists (SLPs) frequently report feeling underprepared to accurately work with interpreters when serving dual language learners (DLLs) (Guiberson; Atkins, 2012; Santhanam; Parveen, 2018). However, collaborative training experiences can provide SLPs and interpreters with the opportunity to converse about their roles, discuss ethical problems with interpretation, and merge their shared thoughts to ensure best practices for clients (Zhang, 2020). The purpose of this research project was to understand the ways in which an interdisciplinary simulated training experience and interdisciplinary immersion screening experience compare and contrast in relation to communication sciences and disorders (CSD) and interpreter students' feelings of preparedness for working collaboratively within their future professions. Researchers gathered data through reading, analyzing, and then qualitatively coding CSD and interpreter student summaries written post- simulated experience and post-screening. Student reflections included overall perceptions of the experience as well as perceptions regarding the ways in which the experiences influenced their feelings of preparedness. Student reflections and interviews were analyzed using inductive coding procedures as described by Merriam and Tisdell (2016). Codes, categories, and subcategories were revised and operationally defined during the coding process, until a final set of codes, categories, and subcategories was developed. Findings highlight the similarities and differences in CSD and interpreter perceptions, as well as the similarities and differences in student perceptions of an interdisciplinary simulated experience as compared to an interdisciplinary immersion screening experience. Findings will inform future pre professional and professional training experiences designed to increase SLP confidence and competence for working with interpreters and to increase the quality of interpreter and SLP practices for DLLs.

Garber, Alexander

Institution: ***SC - College of Charleston***

Discipline: Physics/Astronomy

Author/Contributors:
Alexander Garber,
Christoph Vogel,
William Pendergrass

Abstract Name: Nondimensional Wind Shear Over West Texas Terrain

Nondimensional wind shear was computed using high frequency wind measurements obtained on a 30 meter tower located near Big Spring, TX. The three components of the wind, along with temperature, were sampled at 32 Hz using sonic anemometers positioned at five height levels on the tower. Coordinate rotations were performed to produce longitudinal, transverse and vertical components of the winds and turbulence statistics were generated for the different measurement heights. These statistics allowed inter alia for the determination of u_star velocity scales, nondimensional wind shears, and Monin-Obukhov stability parameters. Because of limitations due to a significant roughness sublayer and finite fetch, two middle height levels were used in the analysis. Parameterizations found from previous studies are compared to results from this analysis.

Garbrecht, Brian

Institution: ***IL - Northeastern Illinois University***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Brian Garbrecht

Abstract Name: Identities of Adoption

As an adoptee myself, my body of work is about adult adoptees and their self-identity formation; along with the conditions that can cause an adoptee to have a nomadic self-identity. Or, a shift in their identity based on who they are with or their surroundings. This can stem from traumas that most adoptees seem to face in some way from being taken away from their biological family and raised by adopted families. At times, these adoptions take place with families that have a different race or cultural background from the adoptee, which can add to the chance they will face identity challenges. Adoption creates complicated familial relationships that can be hard to navigate, as most adoptees are never taught about the effects adoption could have on them, and the resources they can use to seek understanding.I use black and white medium-format film to make portraits with adult adoptees after we have talked about their adoption, and their self-identity. In some instances, double exposures of the film are used to help convey the possibility of a nomadic self-identity, wavering identity, or other marks being an adoptee can have on an individual. In these instances of double exposure, one exposure is taken in focus, while another is taken out of focus, which accounts for what can appear as a glowing or softening of an image. Final photographs are printed as large high-contrast images that convey mood, and a larger-than-life scale that forces the viewer to be confronted with these identities of adoption, and to make them think deeper into the practice of adoption, and its effects on those involved.

Garcia, Angel

Institution: ***IL - Elmhurst University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Angel Garcia

Abstract Name: How Minority Students Turn into Tokens: An Analysis of the Diversity Regime and Tokenization

Major Purpose While historically higher education institutions (HEI) have adopted diversity policies under the guise of correcting social wrongs, the reasons for diversity in HEIs have changed. HEIs have shifted toward a desire for diversity based on perceived social capital gains and potential economic benefit. Though diversity policies have evolved, minority students still report negative campus racial climates and tokenization. Thomas (2018) finds that these effects are indicative of an institutional construct: the diversity regime. In the diversity regime, Thomas (2018) describes a “benign commitment to diversity” among HEIs. Using the diversity regime framework, I will show how students from universities are tokenized by HEIs. Methodology The university I attend fits the criteria for having a “benign commitment to diversity.” To investigate its effects on students, I will recruit students from my university from primarily Latino/Latina backgrounds. Using Constructivist Grounded Theory, I will conduct semi-guided interviews to question roughly 30 students. Next, I will code interview content into themes related to tokenization experiences and the diversity regime. This project has been approved by the IRB. Expected Results Through qualitative coding, I expect to find consistency with the original diversity regime framework. Also, I expect that tokenization will play a key role in minority students’ experiences. In addition, I expect to find evidence about the mechanisms which might influence becoming a token. Lastly, I expect the data will show students feel a pressure to reify their identity as a result of their college experience. Conclusion and Implications This project can provide universities with feedback to change their practices surrounding diversity and make active commitments to equity and inclusion. More directly, it will inform universities how to amend their diversity, equity, and inclusion policies to inhibit tokenization. It may also provide new insights into how tokenization works at an institutional level.

Garcia, Angelica

Institution: *TX - The University of Texas at El Paso*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Alexah Delgado *Angelica Garcia* *Jesus Avila*
Michelle Martin

Abstract Name: Seniors on the Move

The Hispanic population is the first largest racial/ethnic group in the city of El paso Texas, accounting for 81.5% of the total population. Evidence has shown an increase in diabetes and multiple other preventive health conditions in this specific population. Many of these health conditions can be associated with sedentary lifestyle and lack of motivation to be active. Therefore, the purpose of this program was to improve the quality of life of male and female Hispanic seniors (age 65+) through physical activity and social interactions.Participants were asked to complete quality of life assessments at the beginning and the end of the program to compare the improvement of physical activity, mood, and social aspects of their life throughout the course of the program. In addition, participants were asked to complete questions regarding the impact of the study on their daily lives. Participants engaged in 45 minutes of physical activity including: walking, stand in place exercises, and range of motion (ROM) while being in partners or groups to help improve daily function and social interactions. The program was integrated through a 3-week span of 2 days per week. The program began with 17 participants (1 male, 16 female, age= 65+ years) and finished with 6 consistent female Hispanic participants. Parametric and nonparametric statistic results have shown a non-significant difference between pre-evaluation and post implementation of service-learning project (p > 0.05). Even though, the results of this study provide evidence that there was no significant difference in improving the physical activity in the Hispanic senior population, participants were grateful for the opportunity and did see improvements in daily activities and overall quality of life. Further analysis is needed in a longer program and bigger sample size to identify the potential effect of physical activity and social interactions in the Hispanic senior population.

Garcia, Axel

Institution: *TX - Laredo College*

Discipline: Public Health

Author/Contributors:
Axel Garcia

Abstract Name: The Effects of Energy Drinks On The Human Body

In today's society, energy drink consumption has increased. It is important to know what ingredients are in energy drinks and what we are ingesting due to them being linked to multiorgan failure and acute liver injury. While the energizing effects only last approximately 1 to 2 hours, the negative damage to one's health can last a lifetime. This research focuses on the hidden ingredients in energy drinks that are not found in nutrition labels. The purpose of this research is to analyze how these unmentioned ingredients affect the human body and the different ways they could potentially be toxic to us. The research concentrates on three major ingredients: Guarana, Ginseng, and Niacin. Since previous study has been done on other energy drinks, this research focused on energy drinks that have not been studied like Bang, Celsius, and Ghost. These three energy drinks have been recently growing in popularity due to them being considered as a healthier option for consumers. A Vernier Labquest®2.0 (Beaverton, OR 97005 USA) and Vernier pH Sensor (Beaverton, OR 97005 USA) were used to gather information on the pH of the energy drinks. Hence, the results gathered were relevant to determine how acidic these drinks are. The energy drinks all had a pH lower than 4 which meant they are all acidic. A 14 question survey was distributed to the public to gather data on possible symptoms experienced by consumers. Common physical symptoms reported by participants include : Energetic 50%, nauseated 12.5%, alert 12.5%, jittery 25%, and 25% did not experience symptoms. Mental symptoms felt by participants were: anxious 50%, relaxed 12.5%, drained 12.5, and 25% of participants experienced no symptoms. This data shows how dangerous these drinks can be to the human body.Keywords: Guarana, Ginseng, Niacin, Toxic, Acidic

Garcia, Celine

Institution: *CA - California State University - Channel Islands*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Celine Garcia,
Melissa Soenke

Abstract Name: **Mortality Salience and Political Attitudes: The Implications on Queer Politics and the LGBTQIA+**

Terror management theory (TMT) suggests that we utilize cultural worldviews and self-esteem to reduce our anxieties about our mortality. Previous research on TMT and politics shows when people are presented with mortality salience (MS), reminders of death, it leads them to make decisions according to their political beliefs (Burke et al., 2013). MS also results in worldview defense, making decisions that are most positive towards in-group members and are more negative towards out-group members (Burke et al., 2013). Historically, when the human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) had a rise in cases, there was a need to reduce the MS it caused. The queer community was largely affected. Politically driven prejudice impacted how people viewed these illnesses and treatments. Currently, we are facing a rise in cases of monkeypox, and the criteria an individual must meet to receive a vaccination for monkeypox includes disclosing types of sexual partners, how they identify themselves, and in what settings sexual acts may take place in (Centers for Disease Control, 2022). This has led to a large misinterpretation that monkeypox is only affecting the queer community, similar to what was first thought about HIV when it was referred to as gay-related immunodeficiency syndrome (GRID). This study will investigate how MS and political ideology impact worldview defense and attitudes toward people with illnesses that largely affect the queer community. Participants will be grouped by political ideology and primed with MS or control. Participants' attitudes toward the queer community and a fictional character with monkeypox will be measured. We hypothesize that participants in the MS condition who are conservative will express more negative attitudes toward the fictional character, than participants in the MS condition who are more liberal. We will explore how these results can inform current reactions to monkeypox in the US.

Garcia, John

Institution: *CA - University of California - Los Angeles*

Discipline: **Biology**

Author/Contributors:
John Garcia *Jesse Martinez* *Rafael Sandoval*
Jesse Zamudio

Abstract Name: **Investigating the Role of the RNAi Pathway in Pericentromere Silencing in Stem Cells**

In the eukaryotic genome, a large portion of DNA includes non-coding repetitive regions that undergo RNA transcription. One specific region is the pericentromere, which contains tandem satellite DNA repeats and is proposed to be silenced by heterochromatin. However, in some circumstances, pericentromeres are transcribed, leading to increased cellular levels of satellite RNA. Previous studies indicate that aberrant pericentromeric RNA levels drive tumorigenesis of different cancers. Thus, it is important to understand the mechanisms of pericentromeric RNA transcript regulation.We hypothesize that Argonaute (Ago) proteins of the RNA interfering pathway (RNAi) play a direct role in the repression of pericentromeric RNA at specific stages of the cell cycle. This hypothesis was tested in mouse embryonic stem cells (mESCs) using three central aims. First, we evaluated the impact of depletion of key RNAi proteins Dicer and Ago on pericentromeric RNA levels. Second, we tested whether the catalytic activity of Ago2 is required for repression by comparing pericentromeric RNA expression in Ago2- and Ago1-only expressing cells. Finally, we developed a cell synchronization approach to assess how pericentromeric RNA is regulated during the different stages of the cell cycle. Our experimental approaches utilize RNA and protein quantification in mESCs that have conditional Ago2 or Ago1 expression in an otherwise Ago1-Ago4 null background, and similar conditional Ago expression in Dicer knockouts.The mESCs were treated for wildtype Ago expression or depletion and following this, the RNA and protein levels were quantified. Upon RNA purification, the samples were resolved on gels for northern blots probing pericentromeric RNA and GAPDH, which serves as a loading control. To further support differential expression, quantitative PCR was used to measure RNA levels upon RNAi factor depletion. Finally, the standardization of cell cycle stage markers was characterized by northern and western blots to ultimately assess pericentromeric RNA with cell cycle synchronization.

Garcia, Luis

Institution: ***IA - Kirkwood Community College***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Luis Garcia,
Anissa Daniel,
Ted Weiland

Abstract Name: Transformation, Expression, and Purification of Formate Dehydrogenase Mutants

Formate Dehydrogenase (FDH) is a well-documented enzyme found in bacteria and yeast that catalyzes the reaction between formate and NAD+ through the transfer of a hydride ion. This project planned on the mutation of wild type FDH expressed in E. coli through the Gibson Assembly method which would be followed by expression and purification of wtFDH mutants. The resulting products were to be transported to the Cheatum lab at the University of Iowa where further analysis of the enzyme could be studied by 2D-IR Spectroscopy. Work on the purification of wt FDH was hampered by issues with the column purification steps, which led to a deeper analysis of the method used previously to purify wt FDH via affinity chromatography. This led to a move to modify wt FDH with a histidine tag using the Gibson Assembly. Overall there appeared to be success at placing a histidine tag on the C-terminal end of the wt FDH. Future work will include continued modification of the wt FDH protein and purification of the products for further study.

Garcia, Monserratt

Institution: ***CA - California State University - San Bernardino***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Paola Boshra,
Monserratt Garcia

Abstract Name: The Development of Inhibitors used to Target Falcilysin (FLN) in the Human Parasite, Plasmodium falciparum

There are five species of parasites that are involved in malarial infection: P.knowlesi, P.malariae, P.ovale, P.vivax, and P.falciparum. The human parasite Plasmodium falciparum causes the most severe case of malaria and is common in the Sub-saharan region of Africa and South Asia. Our study focuses on developing inhibitors against falcilysin (FLN), and metalloprotease expressed by the parasite during infection of the human host. Selective chemical inhibition is a valuable tool for understanding the biological role of falcilysin. Our group previously reported the development of potent FLN inhibitors using a piperazine-derived hydroxamic acid scaffold. This study focuses on optimizing the N1 and N4 substituents of the piperazine ring. Synthetically accessible candidate structures were DOCKed against the FLN crystal structure, and a subset of 20 promising compounds were selected for synthesis and testing against FLN and cultured P. falciparum. These studies revealed that a variety of bulky aromatic groups were tolerated at the N1 and N4 positions of the piperazine core. Introduction of naphthalene, dibenzofuran, and various substituted benzene rings resulted in improved potency relative to the previous lead compound. Notably, we also observed a correlation between the binding affinity predicted in our DOCKing studies and biochemical inhibition FLN, indicating that virtual screening is likely to be an effective tool for optimization of this scaffold against FLN.

Garcia, Pablo

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Josh Zupanc,
Pablo Garcia,
Jenna Roth,
Brynn Daniels,
Nick McFadden,
Cameron Stensen

Abstract Name: Smartphone Use and Well-being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.

Garcia Fernandez, Francis

Institution: ***FL - New College of Florida***

Discipline: Political Science

Author/Contributors:
Francis Garcia Fernandez

Abstract Name: Indigenous Representation in International Organizations: How Arctic Indigenous Peoples Cooperate to Address Climate Change

Utilizing non- and pseudo- regional governmental cooperation, Arctic indigenous peoples (AIP) collaborate to produce frameworks that address the effects of rapidly diminishing Arctic sea ice. Some of these frameworks include theInuit Circumpolar Council's 2009 Declaration on Sovereignty in the Arctic and the Arctic Council's 2013 Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic.The international regional cooperation of low-level, previously disenfranchised AIP is significant in the evolving political, economic, and natural environment of the Arctic because they have a profound connection to the land and its resources. AIP are also extensively involved in regional inter-governmental organizations (IGO), forming a rare working relationship between low-level cultural or ethnic groups and high-level nation-state governments. This study analyzes the benefit of meaningful involvement by indigenous peoples in inter-governmental organizations, particularly in the context of climate change. A conclusion is reached through comparative studies of IGO work on climate change and governance structures. Although the role of indigenous peoples in the Arctic is unprecedented in the present system of International relations, AIP cooperation has proven to be consequential and useful in addressing climate change in the Arctic and improving IGO governance. Heightened AIP visibility in international relations generates questions about the sovereignty of indigenous peoples, the role of AIP in addressing climate change, and the ideal structure of IGOs. The findings of this paper cover a rising phenomenon in liberal international relations theory and provide insight into the impact that cultural minorities produce within international organizations.

Gardiner, Sophie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Maya Frodl,
Saige Tichy,
Lauren Glenna,
Tatiana Bobrowicz,
Sophie Gardiner

Abstract Name: **3D Printing to Improve Patient Outcomes for Mini-Thoracotomy Aortic Valve Replacements and Mini-Mitral Valve Repairs**

Aortic valve replacement (AVR) was established in the 1960's and has become a routine therapy to treat patients with severe aortic valve dysfunction. AVR is usually performed using a full sternotomy and cardiopulmonary bypass support. Since the late 1990's, minimally invasive procedures have been developed for aortic valve surgeries, such as the mini-thoracotomy AVR. These less invasive procedures claim reduced postoperative complications, shorter lengths of stays in the hospital, and lower mortality. However, the minimally invasive nature may provide challenges in the viewing of patient anatomy during the procedure. This project will provide the 3D printing capabilities needed to investigate if using 3D printed anatomical models for pre-operative planning and/or patient education will result in better patient outcomes for mini-thoracotomy AVR surgery, particularly in those with thoracic abnormalities. For selected patient cases, the Mayo Clinic Luther Campus will provide UWEC researchers with DICOM files for segmentation and 3D printing. The UWEC research team will perform the segmentation and provide the physical 3D anatomical model with initial feedback on accuracy from Mayo physicians. Ultimately, the Mayo Clinic collaborators will evaluate the effectiveness of using the 3D models in patient outcomes as well as patient education on the procedure.

Gardiyehewa, Thusna

Institution: *NC - North Carolina State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Thusna Gardiyehewa,
Michael Sikes,
Lisa Metzger

Abstract Name: **The Role of USF1 in Lymphocyte Responses to Double-Stranded DNA Breaks**

We are investigating the role of DNA break-induced activity of the Upstream Stimulatory Factor 1 (USF1) transcription factor in lymphocytes. Double-stranded DNA breaks (DSBs) are the most dangerous forms of DNA lesion. Most research on DSB repair has focused on early actions of the transcription factor p53. In contrast, steps that occur days after DNA damage as cells complete repairs are not well known. We found that DSBs alter USF1 activity for days after DNA damage. Lymphocyte cell lines that were engineered by RNA interference to lack activity from both USF proteins (USF1 and USF2) showed changes in the transcriptomic response to DSBs for days. To test the specific role of USF1, we used RNAi to knock down only USF1 expression, and then exposed USF1 RNAi cell lines to the topoisomerase inhibitor etoposide. We measured transcription of DSB response genes in USF1KD clones and controls that carry a scrambled RNAi at 1, 3, and 6 day time points. By three days, Trp53 transcript levels were induced in control cells, but this induction was blocked in USF1 RNAi cells. We also found that USF1 RNAi disrupted the profile of Cdk6 expression. When live cells were counted at each time point, we found that USF1 RNAi populations accumulated significantly faster between days 3 and 6 than controls, suggesting that loss of USF1 disrupts cell cycle control in the late stages of a DSB response. This work provides an essential stepping stone for further research on DSB response mechanisms and cell growth control.

Gardner, Christopher

Institution: *GA - Kennesaw State University*

Discipline: **Education**

Author/Contributors:
Chinasa Elue *Cristen Canavino* *Christopher Gardner*
Sarah Hampton *DeCarlos Mckinney* *Zoe Brown*

Abstract Name: **Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the Experiences of First-Year College Students**

Student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years. The offset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before. Of growing concern is the rising mental health crisis that is sweeping through higher education which warrants an immediate and intentional response. Further, students are currently facing dire financial constraints, food and housing insecurities, and many other challenges that complicate their college experiences. As freshman students are now experiencing college for the first time, their experiences may vary drastically from their predecessors. Specifically, current first-year students' college transitions are muddied from their various high school experiences that may have been a remote, hybrid, or in-person with some variation of security measures. Further, the grief, loss, and trauma first-year college students have experienced during the pandemic warrant special attention as we are contending with the types of resources and support, they need to matriculate and complete their degrees. The remnants of grief and trauma from the pandemic still linger and are impacting the college experiences of first-year students and their abilities to navigate their academic and professional goals. Hence, through a qualitative research design, our research explores the lived experiences of first-year college students. Specifically, the research question explored in our study is: How or to what extent has grief and trauma from COVID impacted the educational journeys of first-year students? The aim of this research is to provide an important opportunity to investigate how to better support college students as they move through collegiate experiences.

Gardner, Colton

Institution: *UT - Utah Valley University*

Discipline: **Biology**

Author/Contributors:
Wayne Whaley,
Colton Gardner

Abstract Name: **The Effects of Climate Change on Papilio indra Lepidoptera**

Climate change may be responsible for the extinction of numerous plant and animal species. Recently, drought in the Western United States caused by climate change has raised concerns. Amongst these, it was hypothesized that climate change has had detrimental effects on the Indra Swallowtail butterfly and their host plants. This rare butterfly is endemic to the Western United States. This is concerning because these butterflies are pollinators with mutualistic symbiotic relationships such that its extinction will have a cascading effect on the environment. In this research study, 7 locations throughout Nevada, California, and Arizona were chosen to determine the fitness of the butterfly populations in drought conditions. This butterfly deposits eggs on a specific plant of family Apiaceae which serve as maturation sites for caterpillars. The locations were studied before the drought and had healthy plants with an abundance of caterpillars, meaning that the butterflies were reproducing and thriving. To determine the health of these populations, several factors were studied including plant health, egg numbers, and caterpillar activity. Drought caused decreased plant health, with reduced plant numbers. Moisture is important for Indra butterflies because they will not exit diapause until water has fallen. Under drought conditions they sometimes wait years before exiting diapause to reproduce. In all locations Indra swallowtails had not left their diapause for a substantial amount of time. In addition to not seeing Indra adults near host plant locations, there was no evidence of caterpillars or eggs on plants that in years past were filled with them. The data from the locations were compared with prior data when there was normal moisture. The findings were obvious: climate change had a negative effect on the Indra butterfly. Water is imperative for these populations, and evidence shows that the lack of moisture has severely reduced plant and butterfly fitness.

Garey, Simon

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Brenya McNally *Sabrina Duncan* *Simon Garey*
Nathan Hau *Kate Mueller* *Sudeep Bhattacharyay*

Abstract Name: **Effects of Protein Crowders on the Folding of DNA Repair Protein Using High Performance Computing**

Xeroderma Pigmentosum group A (XPA) protein, a key regulator of the nucleotide excision repair pathway and is essential for the repair of DNA damage due to platinum-based chemotherapy. Due to its intrinsically disordered nature, the structural dynamics of XPA likely play a major role in the activation/inactivation or changing functions of the protein. However, being disordered the protein is difficult to crystallize and hence lacks a X-ray crystallographic three-dimensional structure. Thus, little is known about the folding dynamics of these proteins and the role that other biomolecules or crowders play in the process. However, Alphafold (1), the artificial-intelligence-aided protein structure database offers three-dimensional structural information of disordered proteins. To investigate the folding effects of XPA, a molecular simulation study was conducted in presence and absence of crowders using on-campus supercomputers. This simulation used molecular dynamics to probe protein movements and used Newtonian/molecular mechanical calculations to study the energetic changes produced due to the interactions between the protein and surrounding environment. Polyethylene glycol crowders (PEG), ranging from molecular weight of 600-20k, along with ethylene glycol (EG) crowders, water molecules, and various ions were added to simulate an intracellular environment. We hypothesize that the addition of these crowders will enhance the folding of XPA, allowing for a better understanding of intracellular XPA structure and the function of the intrinsically disordered protein regions. The effects of crowders on the structure, dynamics, and energetics of XPA using 50 ns simulation data will be presented.

Garibaldi, Gabriel

Institution: *TX - The University of Texas at San Antonio*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Sherry Daniel *Gabriel Garibaldi* *David Cifuentes*
Christopher Rathbone

Abstract Name: **The effect of ethanol and adipogenic differentiation on myogenesis & insulin sensitivity in C2C12 Cells**

In Type 2 diabetes skeletal muscle has a reduced sensitivity to insulin. Another characteristic of diabetic skeletal muscle is the presence of adipocytes within and between muscle fibers, which is implicated in altered insulin sensitivity. The effects of ethanol on the content of adipocytes within skeletal muscle and insulin sensitivity are not fully understood. In this study, we will investigate the effects of ethanol on adipocyte differentiation and insulin sensitivity using C2C12 cells.C2C12 cells (20,0000 cells/mL) were cultured in tissue-cultured 24-well plates with growth media (GM) composed of DMEM, 10% fetal bovine serum, 1% Pen-Strep (P/S), and 0.2% Mycozap (M/Z) for 3 days. Upon 70% confluency, samples were then separated into different treatment groups: (1) Differentiation Media (DM) +/- Ethanol (EtOH), (2) Adipogenic Induction (AI) and Maintenance Media (AM) +/- EtOH. Samples in the DM+EtOH Group were cultured in DM (DMEM, 2% Horse serum, 1% P/S, 0.2% M/Z) along with 0%, 0.5%, 0.75%, 1%, 1.5% concentrations of 200% proof EtOH. Samples in the AI/AM+EtOH Group were cultured in AI media for 3 days (DMEM/F12, FBS, 1% P/S, 0.2% M/Z, Insulin, Forskolin, and Dexamethasone) along with the aforementioned concentrations of 200% proof EtOH prior to switching to maintenance media for the addition of adipogenic factors. Samples in the AM+EtOH Group were exposed to the established concentrations of 200% proof EtOH at the point of Induction Media and Maintenance Media (DMEM/F12, FBS, 1% P/S, 0.2% M/Z + Insulin). After performing immunofluorescence staining with myosin heavy chain (MyHC) and DAPI, confocal microscopy will be used to quantify the number of C2C12 myotubes, as well as fusion index (nuclei per myotube), average myotube length, and average myotube diameter. It isexpected the Ethanol will significantly decrease fusion index, myotubes per field and total nuclei.

Garland, Connor

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Connor Garland ,
Erica Kladar,
Qianlong Liu,
Brett Neumann

Abstract Name: **The Determinants of Income Inequality in Rural Wisconsin and Policy Implications**

Rural communities in Wisconsin are currently facing many economic challenges, namely high levels of poverty, declining population, lack of high-quality services, and poor infrastructure. These are issues that call for innovative and creative approaches and require prompt attention. This project is a collaboration of three faculty members at the Department of Economics at our institution. Our project has three main goals. First, we propose to measure regional, particularly rural, income disparities while identifying the main explanatory factors with American Community Survey data and quantile regression analysis. Second, we will examine and quantify the impact of entrepreneurship, growth of immigrant populations and access to broadband on rural incomes in Wisconsin. Third, we will offer insights and recommendations to Wisconsin policy makers. Our research findings will help assess economic needs and resources and provide policy options to address challenges facing rural communities.

Garrido, Natalia

Institution: *UT - University of Utah*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Natalia Garrido *Claudia Geist*

Abstract Name: **The more you know: Knowledge about gender and sexual minority experiences as a tool to improve inclusive health care practices**

In current literature, healthcare providers' attitudes, the healthcare system, and biased health curriculums are some of the main bridges between creating inclusive, gender-affirming healthcare for sexual and gender-diverse (SGD) people. For SGD people, many unnecessary barriers exist that prevent them from accessing health care and receiving quality, affirming care. The burden of overcoming these barriers must not be prominently placed on SGD people, but rather on current and future healthcare providers. Education on SGD issues for undergraduate pre-health students is a first step toward shifting biased education and improving inclusive affirming patient care. In our previous research, we found that pre-health students express uncertainty and ambivalence on some issues related to sexual and gender diversity. Similarly, in other studies, medical and nursing students have expressed not having enough education and skills on LGBT and sexual health. Most health profession curriculums provide few hours of low-quality SGD health. Failure to understand and empathize with sex and gender differences and the interconnections of SGD identities and health have left the SGD community at risk for life-threatening and chronic health conditions. In response to the concerns and uncertainties about quality SGD education, I plan to cultivate a digital infographic booklet that can be readily accessible for pre-health students at the University of Utah that focus on gender, sex, and sexual orientation. Initially, the resource will help define gender and sexual identities. Pre-health students will also learn about health disparities, social determinants of health, minority stress, and social safety in order to understand SGD people's sensitivity to healthcare and their accessibility. Additionally, many pre-health pathways recommend patient exposure, so the booklet will also guide students on how to make social safety a tool for making SGD people more comfortable and safer to express their authentic selves in the healthcare system.

Garth Jr, Derrick

Institution: *IA - Iowa State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Derrick Garth Jr

Abstract Name: **Interrupting the Discrimination-Distress Link: Religious Commitment and Racial Identity**

Racial discrimination is a universal experience for Blacks in America. Research has shown that racial discrimination is related to a host of difficulties, including higher levels of depression, race-based traumatic stress, and anxiety symptoms. Given this, it is critical for researchers to explore the potential protective factors that help to shield Black people from the effects of racism. Two prominent factors are racial identity and religious commitment. Despite the body of work examining the connection and history Black Americans have with racial discrimination, religion/spirituality, and racial identity, there is still an unexamined gap in understanding how these together can affect Black psychological well-being. The current study overcomes this gap by examining the role of religion/spirituality and racial identity in connection with discrimination and psychological distress. The purpose of this proposed study is to determine how both religious commitment and racial centrality (a dimension of racial identity) affect the relationship between discrimination and psychological distress. Specifically, I examine whether racial centrality and religious commitment moderate the hypothesized positive association between discrimination and psychological distress. I hypothesize that high religious commitment will moderate the relationship between discrimination and psychological distress. The sample will be comprised of 150 participants who will be at least 18 years old and self-identified as Black or African-American at a Midwestern Predominately White Institution. Participants will complete a survey. To test the hypotheses that religious commitment and racial centrality serve as moderators of the relationship between discrimination and psychological distress, I will conduct a hierarchical linear regression analysis. I will examine the two-way interactions between discrimination and racial centrality and discrimination and religious commitment and the three-way interaction of discrimination, racial centrality, and religious commitment. The findings will address the gap in understanding how religious commitment and racial centrality are associated with discrimination and psychological distress.

Garza, Christian

Institution: *TX - San Jacinto College*

Discipline: Physics/Astronomy

Author/Contributors:
Joshua Tickell,
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Antonio Gutierrez,
Thien Ngo,
Aiden Fair,
Rachel Meyers,
Christian Garza,
Madhu Gyawali,
Mallika Gyawali

Abstract Name: **Decadal Variations of Six Criteria Air Pollutants Over Texas**

The Clean Air Act requires the US Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as “criteria air pollutants”). These six pollutants are carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulfur oxides. These pollutants are found all over the U.S. They can harm health and the environment and cause property damage. The EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standard in accordance to the Clean Air Act. States must develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to achieve the criteria for each area designated nonattainment for a NAAQS. This study presents in-situ surface measurements from the Air Quality System (AQS) EPA for six air pollutants from 2005 to 2022, as well as the weekly, monthly, and yearly trends for these pollutants over Texas’ major population centers. This study will analyze these trends for any correlation with petrochemical industry, vehicle usage, technological advancement, and natural events. Although the overall trend is that of a decrease in the concentration of these pollutants over time, it is worthwhile to explore more granular trends in an effort to identify their underlying causes.

Gaskill, Crystal

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Shantel Brown,
Frederick Gaskill,
Serenna Snider

Abstract Name: **Ties Between Social Media Use and ADHD, Depression, and Anxiety-Related Symptoms**

Social media has become a staple in the life of adolescents and young adults. In a recent study, 97% of teens reported using at least one social media platform (Anderson,; Jiang, 2018). With this increased use of social media platforms, psychologists are concerned about their potential impact(s) on people's experiences in life. One avenue of interest is the relationship between social media usage and mental health conditions. Studies have reported that high social media use is positively correlated with symptoms of ADHD (Baumgartner et al., 2017), anxiety, and depression (Hussain,; Griffiths, 2019). Through this study, we predict to find similar findings, hypothesizing that ADHD, depression, and anxiety-related symptoms in University of Wisconsin-Eau Claire college students will all be positively correlated with their time spent on social media. To collect this data, the research team developed a survey that asked participants to report their demographic information (age, gender identity, sexual orientation, and major), time spent using social media, and <a>mental health-relatedsymptoms using the PHQ-9, GAD-7, and ASRS-6 assessments. Participants will be recruited through WRIT 114-120 classes by asking the students to voluntarily participate in an online survey. To analyze the survey results, the researchers will conduct bivariate correlational analyses of the total time spent on social media in the last seven days and each set of mental health-related symptoms (ADHD, depression, anxiety). We perceive this research, and the findings, as important for furthering the understanding of the relationship between ADHD, depression, and anxiety symptoms and social media use.

Gasser, Angela

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: World Languages

Author/Contributors:
Angela Gasser

Abstract Name: **Transcription and Translation: Challenges, Methods, and Lessons Learned from Translating Spanish Language Oral History Interviews**

Oral history interviews are a method of qualitative research that provide opportunity for stories to be heard that may otherwise be left unnoticed, in order to learn from these stories and enable change based on the perspectives that are shared. Voces del Campo/Rural Voices is a research project that aims to document and preserve the life experiences of people in Wisconsin, specifically in the Latinx community, by conducting oral history interviews. Given that Spanish is the primary language of many of the interviewees, transcription and translation of these interviews are key steps in the documenting and sharing of these experiences with a wide audience. Neither process is as straightforward as it may seem and can have crucial impacts on the integrity of the interviewee and the quality of data provided by the interview. This research first intends to explore methods of translation and transcriptions including naturalized versus denaturalized transcription and semantic versus contextual equivalence in translation. Furthermore, challenges such as accuracy, slang, word equivalency, figures of speech, and translator cultural competence and language familiarity will be examined. This will be accomplished by analyzing previous literature on these processes and offering a student perspective from the Voces del Campo project. Finally, a discussion of the lessons learned from transcribing and translating oral history interviews highlights the significance of the responsibility transcribers and translators have in accurately conveying the stories of the interviewees and the significance of the trust placed in them to do so in a respectful manner and offers practical advice for students performing interviews or oral history research in the future. The lessons additionally emphasize the importance of cultural understanding in these processes and the increased cultural understanding that comes with being a part of them.

Gast, Matthew

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Political Science

Author/Contributors:
Matthew Gast

Abstract Name: **Supervised Injection Sites (SIS): A Response to the Drug Epidemic in America**

The War on Drugs, “Just Say No”; D.A.R.E. programs were created in the 1970-80’s and focused on preventing drug use at an early age. However, these programs are outdated and ineffective. This can be shown through the increased rates of opioid use and opioid related deaths throughout the United States. According to the Center for Disease Control, in 2019-2020 opioid misuse has led to a 38% increase in opioid-related deaths and the rate continues to climb with the development of new synthetic-opioids. Since the 1990’s and early 2000’s, comparable countries have utilized a new approach; supervised injection sites (SIS). These sites are widely used by other nations abroad and have been expanding rapidly throughout Europe and Canada. The United States, however, only has two sites, both located in New York City. How can the establishment of a SIS benefit the La Crosse, WI community? By looking at peers abroad and domestically, the benefits and challenges of an SIS can be identified. This paper analyzes the history, political challenges, public opinions, and cost savings of supervised injection sites across the globe, specifically Insite in Canada, Uniting MSIC in Australia, and OnPoint in New York City. With drug use on the rise and La Crosse having the highest rate of opioid overdose related deaths and opioid related hospital visits in the Western region of Wisconsin, there is a need for the La Crosse community to establish a SIS. This SIS will not only save lives of drug users, but promote public health of the greater community, and provide costs savings in the governmental response to the opioid crisis that affects every community in America.

Gavalas, Sophia

Institution: *GA - University of Georgia*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sophia Gavalas,
Vincent Starai

Abstract Name: **M. tuberculosis secreted effector protein, PE17, binds eukaryotic lipid droplets**

Mycobacterium tuberculosis (Mtb) is a pathogenic bacterium known for causing the respiratory disease, tuberculosis, which remains the second-most infectious killer behind COVID-19. With drug resistance of M. tuberculosis on the rise, treatments to combat Mtb infections have become less effective, escalating the urgency for research towards the development of new pharmaceutical treatments. The ability of M. tuberculosis to infect its host relies on its capabilities to invade alveolar macrophages, evade host cell defense mechanisms, and to utilize host cell nutrients to support its intracellular lifestyle. It is known that Mtb secretes a complement of proteins into the host cell during infection, which allow the bacterium to meet these goals. One such secreted protein, PE17 (Rv1646), belongs to the PE/PPE family of proteins, which have been linked to the pathogenesis and survival of other Mycobacterium pathogens. Despite this knowledge, no known function of the PE/PPE family proteins have been discovered to date. By using simple eukaryotic cell model systems, Saccharomyces cerevisiae, we now show that PE17 binds specifically to lipid droplets in both human lung epithelial A549 cells and yeast. Furthermore, we show that yeast strains expressing PE17 are exquisitely sensitive to the fatty acid synthesis inhibitor, cerulenin. As yeast must consume the neutral lipids stored within lipid droplets to survive treatment with cerulenin, we now propose that PE17-decorated lipid droplets are unable to be utilized by the host and may serve to increase the host intracellular lipid droplet population for consumption by M. tuberculosis during the infection. These findings provides vital insight on the pathogen's ability to infect and persist within host cells through the acquisition of lipid droplets.

Gawande, Bhagyashri

Institution: *NE - Creighton University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Bhagyashri Gawande

Abstract Name: **A Novel, Unbiased 3D Region-Based Convolutional Neural Network for Hair Cell Detection, Electron Microscopy Based Hair Cell Image Segmentation and Deep Embedded Subspace Clustering for Prediction of Cochlear Hair Cells.**

Approximately 20% of the global population is affected by hearing loss, which is more than 1.5 billion people. In the United States, ~15% of American adults (37.5 million) aged 18 and over report some trouble hearing. Hearing loss most often occurs in the inner ear, where sound is transduced by inner hair cells (IHCs) and then converted into electrical signals that are carried by auditory nerve fibers to the brain. According to the WHO, unaddressed hearing loss creates an annual global cost of US$ 980 billion, which includes the cost of hearing devices, educational support, productivity losses, and societal costs. This project will develop a novel approach for auditory hair cell detection along the entire length of the cochlea using an innovative deep learning approach. Our deep learning model will use two main algorithms for analyzing microscopy images of cochlear hair cells: 3D iFS-RCNN for hair cell detection and EM-net for hair cell segmentation. To detect and classify cochlear hair cells, we will use iFS-RCNN which encompasses the cell using a box, a classification label, and a confidence score. For hair cell segmentation, we will analyze the fluorescent signal in hair cells along the length of the cochlea using EM-net and optimize spatial embeddings of cells for instance segmentation. We will also use Deep Embedded Subspace Clustering to calculate clusters of pixels for prediction of segmentation masks of missing cells. We envision that our segmentation analysis will be used with fluorescent markers to label the whole cell for volumetric analysis, or spatial distribution of fluorescence within a cell of fluorescently labeled structure (i.e., endoplasmic reticula, mitochondria, or fluorescent drugs). Our deep learning-based algorithms can also be used to validate the protective capabilities of oto therapeutic drugs designed to prevent hearing loss or rehabilitate the ability to hear.

Ge, Bridget

Institution: *NY - United States Military Academy*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Bridget Ge

Abstract Name: **Design and Experimental Results of Planar Antennas for Rocket Integration**

The ability of a rocket to transmit and receive data is critical for precise positioning, communication, and recovery; multiple antennas are required to receive satellite data, maintain communicationwith the ground controller, and broadcast its location throughout its apogee. In this research, three antenna structures were designed for transmitting and receiving telemetry, GPS, and radar signals. A meander line antenna was designed and fabricated for the ISM band (915-910 MHz), a standard patch antenna for the GPS L2 band (1227 MHz), and a corporate-fed two-element patch array antenna for C-band radar (5-6 GHz). The three antennas were fabricated on FR-4 glass-reinforced epoxy laminatematerial using an LPKF ProtoLaser S4 and terminated with printed circuit board (PCB) edge mount subminiature A (SMA) Radiofrequency (RF) connectors. The antenna return loss, VSWR (Voltage Standing Wave Ratio), and bandwidth of the three antennas were measured using an N9913 FieldFox Handheld RF analyzer. The additional characterization will be conducted in an anechoic chamber to obtain gain patterns and shall be presented at the conference.

Geary, Madison

Institution: *OK - University of Central Oklahoma*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Madison Geary,
Xuan Fey Chew,
Omar Lopez Hernandez,
Yuhao Jiang,
Gang Xu

Abstract Name: **Charactering Biohybrid Microswimmers as A Potential Targeted Drug Delivery System**

Guided drug delivery has evolved in recent years to allow for more effective treatment of diseases such as cancer. Cancer is often treated with intravenous chemotherapy which often involves a myriad of unwanted side-effects. In order to achieve reduced side effects and increased treatment efficacy, an innovative method would be desirable if it allows delivery of therapeutics to targeted regions instead of the body being infused with the medication. Chlamydomonas reinhardtii, biflagellate unicellular green algaes with strong positive phototaxis, may serve as a promising guided drug delivery system. The goal of this project is to utilize the phototactic properties of the algal cells that are loaded with therapeutic microspheres as cargos and direct these biohybrid microswimmers with a focused light source. We have developed effective procedures to bind microspheres to algal cell bodies. A large number of cells under various loaded or lighted conditions were recorded under a light microscopy. Their moving trajectories and velocities were tracked frame by frame using a particle image velocimetry (PIV) software. Our preliminary results showed that these algal microswimmers moved at relatively more consistent directionality towards the guided light source, compared with random moving orientation without the guided light. This study will pave the way for further characterization of the novel biohybrid microswimmers as a potential targeted drug delivery system.

Geetaumesh, Amidala

Institution: *CA - California Northstate University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Amidala Geetaumesh

Abstract Name: **Turning Telomerase Off: Computational Drug Discovery for Telomerase**

Cancer is not one disease: any tumor may be the result of one or many pathways that manifest in a dysfunctional cell cycle. One causative pathway includes the activity of the enzyme telomerase, which regulates the relative age of the genetic material within a cell. Telomerase is an active enzyme before birth, and its overexpression is related to cellular replicative immortality, a hallmark of cancer. Therefore, drugs that target telomerase may prove to supplement or enhance chemotherapeutic treatment. The first objective was to collect data on ligands that competitively inhibit telomerase function for chemotherapy drug design. Current telomerase inhibitors include BIBR1532, which is not readily bioavailable. Six thousand ligands from NCBI's Molecular Database were tested for telomerase active site binding using AutoDock Vina. The inhibitor candidates were analyzed for their ligand–enzyme interaction strength in Chimera, relative drug-likeness using SwissADME, and toxicity using the Toxicology Estimation Software Tool. BIBR1532 was used as a positive control throughout all calculations, and a scaled score was assigned to each tested ligand to determine the most promising inhibitor candidate. While most inhibitor candidates that bound strongly to the telomerase active site exhibited toxicity, ligand NCI2968 shows great potential due to its strong enzyme interaction and drug-likeness. Critical to overcoming the adaptive rewiring of cancer cells' survival response to drugs, the collected data may be used to develop new drugs that target alternative cancer pathways. The second objective was to inspire high school students interested in healthcare by educating them on this project's research. Arthur A. Benjamin High School students in Sacramento engaged in games, discussions, and informative illustrations to learn more about this project and the breadth of scientific research. As strides are made in cancer development, encouraging the future generation to approach large issues in healthcare through scientific research becomes an important goal.

Gehl, Maddie

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maddie Gehl,
Chris Wilbur

Abstract Name: **The Influence of Restricted Abortion on Women's Mate Choices**

Reproductive rights have been fiercely contested over the past several decades. With the recent overturning of Roe v. Wade, women's liberty and bodily autonomy is once more at stake. The US Supreme Court's decision to overturn Roe v. Wade has taken away the constitutional right to seek abortion: a decision that has harmful and inequitable repercussions on the reproductive health of many Americans. Given the anxiety and confusion surrounding the removal of Roe v. Wade, it is even more precedent to examine how women's behaviors across of spectrum of disciplines change with the now limited rights. We investigated through an experimental study whether a reminder of the recent Supreme Court decision influences women's mating strategies in the online environment. From past research, we were able to conclude that women who were looking at pictures of men, for mating purposes, preferred faces that were more masculine in appearance.Thus, leading us to hypothesize that women remined of abortion restrictions would be more selective of men, and would exhibit greater interest in masculine-appearing men. Participants were randomly assigned to read an article reviewing the overturning of Roe v. Wade, or an article reviewing a recent Supreme Court decision on open-carry gun laws, or to read no article. They then examined several fictitious Tinder profiles, varying in facial masculinity, and rated their interest in the men.Data will be analyzed through an ANOVA test in SPSS to determine whether the priming of an abortion article has an effect on female college students mate selection. Considering the recency of the overturning of Roe v. Wade, this study is among the first to document how women's behavior might change in the post-Roe v. Wade landscape.

Gehling, Tori

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Physics/Astronomy

Author/Contributors:
Tori Gehling

Abstract Name: **Analyzing the Radius of an Aerosol Droplet Using Enhanced Resonances from Raman Scattering**

The atmosphere contains tiny particles known as aerosols which play an important role in how the sun's rays interact with the Earth's surface. Aerosol droplets reflect the sun's rays to help cool down the surface of the Earth and keep radiation from getting to dangerous levels. Understanding the interaction between aerosol droplets and the sun's rays is going to play an important role in the future of science with concerns ranging from global warming to skin cancer. To better understand how light interacts with the molecules in the air surrounding us, an aerosol droplet made of salt water was caught in a chamber using an Argon laser. The droplet was held in place due to the laser exerting a gradient force which pulled the droplet to the most intense part of the laser beam. While the droplet was held in place, pictures were captured of the droplet and then analyzed using a LabView program.The images were used to get a range of values representing the radius' size, and the images gave position values to see the droplet moving in X,Y,Z coordinates. While the images were being captured, light coming off of the droplet was collected with an optical fiber and sent to a spectrometer. This light gavea spectrum with noticeable peaks. These peaks represented resonances from the droplet which were enhanced with the help of Raman scattering and a red LED. These peaks were then analyzed to find the wavelengths associated with them. The peak data was then sent to another program which looked over the data and gave values of the radius, dispersion, and refractive index of the aerosol droplet. This data could then be compared with the pictures captured from the LabView program to confirm the size of the droplet.

Geiger, Grace

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Chemistry/Materials Science

Author/Contributors:
Grace Geiger,
Tye Seideman

Abstract Name: **Synthesis of Diketopiperazines for the Synthesis of Novel Tryprostatin-Based Microtubule Inhibitors**

Trypotstatin A (TPS A) is a microtubule inhibitor that has anticancer properties. Unfortunately, TPS A is difficult to isolate in large quantities, and has lower activity than other microtubule inhibitors on the market. However, studies have shown that some analogs of TPS A have higher activity than the natural product. Our goal is to synthesis new analogs with higher activity and shorter synthetic pathways while reducing the hazardous chemicals previously used to synthesize TPS A. An important step in our synthesis of TPS A analogs is the creation of a diketopiperazine. This diketopiperazine can be modified in several ways, making it useful for producing new analogs. My work involves the creation of several types of diketopiperazine compounds that will be incorporated into the synthesis of TPS A analogs. Methods used to create these diketopiperazines include amide coupling, catalytic hydrogenation, thermocyclization, and column chromatography. Additionally, Thin layer chromatography (TLC) was used to verify reaction completion and Mass spectroscopy and Nuclear Magnetic Resonance were used to verify identification and purity. If successful, we will create a highly selective and active microtubule inhibitor that can later be used as a cancer treatment.

Geleta, Urim

Institution: *KY - University of Kentucky*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Urim Geleta,
Paresh Prajapati,
Steven Pesina,
Peter Nelson,
Joe Springer,
Wang-Xia Wang

Abstract Name: **Potential role of miR-223 in regulating neuroinflammation through CCAAT-enhancer-binding protein beta**

Chronic neuroinflammation has been implicated in the pathophysiology of several brain diseases including traumatic brain injury (TBI). Inflammatory responses are complex and involve many mediators among which are microRNAs (miRNAs). MiRNAs are noncoding RNAs that negatively regulate gene expression by preventing translation through binding to mRNAs. MicroRNA-223-3p (miR-223) is an X-chromosome residing miRNA that regulates various proinflammatory pathways. Previously, we reported that miR-223 exhibits sexually dimorphic inflammatory responses in brain following controlled cortical injury (CCI). Here we provide evidence that miR-223 regulates neuroinflammation via its validated target CCAAT-enhancer-binding protein beta (CEBPβ), an important transcriptional factor for inflammatory gene expression. In this study, we isolated bone marrow derived macrophages (BMDMs) and brain CD11B+ cells from female and male wild type (WT) and miR-223 knockout (KO) mice. Inflammatory markers from these two cell populations were then quantified using RT-qPCR. BMDM cells grown in culture also were analyzed for CEBPβ and inflammatory marker major histocompatibility complex II (MHCII) using immunocytochemistry. Finally, tissue homogenates from naïve animal brains were used for Western blot analysis. Our results revealed that miR-223 deficiency results in enhanced levels of CEBPβ and MHCII proteins and a concomitant increase in the inflammatory markers NLRP3, TRAF6, TNFα, NFκB, and ITGAM.

George, Rachael

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rachael George,
Benjamin McManus,
Andrea Underhill,
Gerald McGwin,
Despina Stavrinos

Abstract Name: **COVID-19 Mitigation Efforts and Psychological Health Outcomes in Adolescents Residing in the Deep South**

The impact of COVID-19 and its resulting mitigation measures (e.g., shelter-in-place orders, social distancing, suspension of in-person school and extra-curricular activities) may have had serious consequences on adolescents' psychological health. Early reports of short-term effects suggest that COVID-19 led to lowered social activity and outcomes took a much greater toll on particular subgroups (e.g., Black/African Americans, those of lower socioeconomic status). This project investigated the differential impact of COVID-19 on adolescent psychological health as a function of age, race, SES, and gender over time. It was hypothesized the impact of COVID-19 on depression and anxiety would vary by age, minority status, SES, and gender. Drawn from a larger, longitudinal study, adolescents (n=190, Mage=17.12 years, SD=1.98; 73% Black/African American, 53% female) reported depression on the Center for Epidemiologic Studies Depression Scale (CES-D) and anxiety through the General Anxiety Disorder-7 (GAD-7) before and during COVID-19 mitigation efforts. Mixed effects regressions estimated COVID-19's effect on depression and anxiety and if change was a function of age, minority status, SES, and gender. Participants reported change in depression over 18 months (b = .11, t = 2.52, p = .02). There was no recorded change due to COVID-19 or demographic factors. Anxiety was shown to have no effect by COVID-19 when accounting for demographics, but some evidence of an effect of Gender on overall GAD (regardless of time, covid, etc.) with males having lower anxiety compared to females (b -1.58, t = -2.65, p = .01). The long-term consequences of COVID on adolescent social health should be further investigated.

George, Sarina

Institution: *TX - Texas Woman's University*

Discipline: Psychology/Neuroscience

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Diane Mendoza,
Stefania Vasquez,
Sarina George,
Jacquelin Medrano,
Zane Lybrand,
Elisa Na

Abstract Name: **The effects of chronic mild stress on traumatic brain injury recovery**

Traumatic brain injury (TBI) is a debilitating condition which results from a concussive blow to the head and can produce epilepsy, mental health issues, and cognitive and behavioral impairments. The long-term impacts of TBI include brain edema, hypoxia, as well as damage to neural processes, the effects of which may compromise blood-brain barrier function and promote inflammatory responses. It is not clear if prolonged exposure to stress exacerbates symptoms associated with TBI thus the current experiment addresses the impact of chronic mild stress (CMS) on anxiety-like and depressive-like behaviors in a mouse model of TBI. The current study also assesses the combined effect of CMS and TBI on gliosis, the process through which glial cells respond to central nervous system damage. Using S100β staining, we quantified the extent of gliosis in the cortex and hippocampus of mice exposed to CMS, TBI or a combined treatment of both CMS and TBI.

Georgeos, Nardin

Institution: *CA - California State University - Fullerton*

Discipline: Biology

Author/Contributors:
Nardin Georgeos

Abstract Name: **Phenotypic and Transcription Analysis of the Effect of Lactic Acid Bacteria on Carbapenem-resistant Acinetobacter baumannii**

Acinetobacter baumannii is a gram-negative, non-fermenting bacteria, notable for its antibiotic resistance, and in some strains, pan-drug resistance, thus limiting the effects of therapeutics. Therefore, we evaluated the potential of probiotic lactic acid bacteria (LAB) as an alternative therapy to antibiotics by observing the interactions between LAB and A. baumannii that mitigated the virulence expression of the pathogen. Agar overlay and agar well diffusion methods were conducted, respectively, to exhibit the inhibitory effects of LAB on A. baumannii A118 (antibiotic sensitive). Inhibition halos were categorized as “intermediate” or “strong,” particularly in Lacticaseibacillus casei BL23, which also inhibited A. baumannii strains AB5075, AMA16, AB0057, ABUH702, and AYE. A series of RT-qPCRs were conducted to quantify the transcriptional response of A. baumannii AB5075 and A118 when co-cultured with BL23, which showed significant effects on A. baumannii’s virulence-related genes, such as biofilm, motility, iron-utilization, metabolism, quorum sensing, T6SS secretion system, transcriptional repressor, Zn utilization, and resistance and efflux genes. In addition, the antagonistic activity of BL23 on AB5075 was evaluated in healthy human fecal material—a medium with complex microorganisms—resulting in a 35% decrease of viable AB5075 and 50% decrease in total microbial MF. LAB exhibits antagonistic and antimicrobial effects on A. baumannii, as it inhibits the growth of the pathogen by targeting its virulence genes, thus making them a great candidate to study for alternative treatments against the infectious pathogen.

Getachew, Tsebaot

Institution: *MN - University of Minnesota - Crookston*

Discipline: Biology

Author/Contributors:
Tsebaot Getachew *Delainey Lancaster* *Jenna Parfeniuk* *Madeleine Shwaluk*

Abstract Name: **General Microbiology Students Searching for Antibiotics in Minnesota's Wetlands**

As antibiotic resistant pathogens continue to emerge, there is a dire need for the discovery and development of new antimicrobial agents. In Fall 2021,University of Minnesota Crookston General Microbiology students collected soil samples from wetlands of Northern Minnesota. They isolated and characterized the microbes to see if they have antimicrobial activity. Nineteen students were able isolate cultures that showed antimicrobial activity against the safe relatives of the ESKAPE pathogens. The current aim of the research is to conduct a longitudinal study to isolate and identify antibiotic-producing bacteria from bogs and fens collected from the previous student work. We hypothesized that some of the pure culture isolates would produce antimicrobial substances and show inhibition against the ESKAPE safe relative pathogens.Procedures followed the general protocols of the Tiny Earth-Studentsourcing Antibiotic Discovery Initiative. Soil samples were further analyzed using standardized techniques to identify the presence of potential antibiotic-producing microorganisms. Bacteria from these samples were transferred to isolates and tested against ESKAPE pathogens to show signs of antibacterial activity. Streak plates were created for all isolates showing antibacterial activity and incubated at room temperature to further separate the microorganisms to purity. This process was repeated until cultures reached purity. Pure isolates were then tested against ESKAPE pathogens to demonstrate inhibition. Pure isolates that showed inhibition underwent chemical fixation using acetone. Further testing is needed to isolate and extract the antimicrobacterial component. Further characterization of the twelve pure isolates that have antimicrobial activity will be reported. Findings from this research could aid in the development of antibiotics with new antimicrobial properties that can fight off pathogens resistant to current medications.

Getter, Victoria

Institution: *NC - Elon University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Victoria Getter *Anne-Marie Iselin*

Abstract Name: **Correlates and predictors of recidivism among adult incarcerated offenders**

The purpose of this study is to investigate psychological predictors of recidivism among adult incarcerated offenders. We examine mental health information among offenders to test the Criminalization Hypothesis. This hypothesis argues that people with mental illness become trapped in the legal system due to a lack of mental health resources in their community. We also examine perceived social support, openness to treatment, and self-regulation. Previous research found that high levels of perceived social support and self-regulation are negatively related to institutional infractions. Our research builds on this evidence by examining how these variables predict recidivism and by analyzing how open to treatment inmates are based on their perceived social support and self-regulation. We gathered data from 108 male and female adult incarcerated individuals (Mage = 39.29; 76.32% males) from four correctional facilities in North Carolina. Recidivism data is currently being collected and entered. Coding of recidivism will be completed by the end of 2022. Analyses will be conducted in February 2023, and the poster will be completed in March 2023. We measured psychological predictors via self-report and recidivism from criminal public records. This is a longitudinal study with recidivism being gathered three years after predictors. Based on prior research of these variables, we hypothesize and expect to find that (1) inmates who have been diagnosed with a mental health disorder will have more encounters with law enforcement (i.e., Criminalization Hypothesis), (2) inmates who report higher perceived social support and higher levels of self-regulation will also report higher levels of openness to treatment, and (3) inmates who report higher perceived social support and higher levels of self-regulation will be less likely to recidivate. We discuss implications for working with at-risk children to equip them with social supports and self-regulation tactics before their criminal behavior increases in frequency and severity.

Ghandour, Omar

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Oltjona Muca,
Jihee Kim,
Omar Ghandour,
Analía Dall'Asén

Abstract Name: **Exploring the Raman Scattering Response of Meteoritic Fragments**

Raman spectroscopy is a technique that has been used extensively on different kind of samples (carbon allotropes, semiconductors, polymers, microplastic particles, microorganisms, cells, etc.) since it is a nondestructive tool that provides information about their structure and material composition. In particular, it has been employed on meteoritic samples which in general are mainly composed of micro/millimeter sized inclusions, surrounded by a matrix of microparticles, that date from around the time of the formation of our solar system. The study of the physical properties of these relics using Raman spectroscopy can help to understand how planets formed since they can give evidence of the conditions (e.g., thermal, temporal and barometric) in which the materials found in the meteoritic samples developed in our solar system. However, not all the constituents of meteoritic samples have a Raman signal with a high signal-to-noise ratio, or other phenomena present in those materials (e.g., fluorescence) can hide some Raman features. In this work, we examine several meteoritic fragments that have recently been acquired by our group, such as carbonaceous chondrites Northwest Africa (NWA) 7184 and Aguas Zarcas, using this experimental technique. We explore the surface of these samples carrying out Raman spectroscopy measurements on numerous inclusions and surrounding matrix to find materials with high signal-to-noise ratios to analyze the mineralogical composition of the fragments. We correlate these results with other experimental techniques (e.g., optical microscopy, scanning electron microscopy, energy dispersive X-ray spectroscopy and/or atomic force microscopy) to look for signatures of the physical processes that drove the formation of these meteorites.

Ghazaleh, Husam

Institution: *IL - Quincy University*

Discipline: FAN Abstract

Author/Contributors:
Husam Ghazaleh,
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Lavanya Mandava,
Yanshan Wang

Abstract Name: **Embedding Undergraduate research in AI and Cybersecurity Courses**

Artificial Intelligence (AI) and Cybersecurity are driving rapidly in many industrial, commercial, and academic disciplines, ranging from autonomous cars, health systems, and robotics to personalized shopping and recommendation systems. Of late, both fields have demonstrated very successful applications in different healthcare challenges, such as improved patient privacy protection, safer operation of medical devices, precise diagnosis, timely detection of diseases, personalized medicine, and robot-assisted surgeries proposing to name a few. There is thus a pressing need to bring together a powerful research platform and educational capability to develop a highly skilled workforce for AI and cybersecurity-powered healthcare development. The current panel will offer a professional forum to mainly discuss hopes and hypes in high-quality undergraduate research in AI-powered healthcare and cybersecurity. In particular, we will discuss four different AI and cybersecurity areas in healthcare; medical image analysis, clinical natural language processing, AI-assistive devices, and security and privacy in healthcare. Inspired by these four AI topics, the presenters will discuss practical methods and tools to implant undergraduate research and creative inquiry into computer science, AI, computer engineering, and cybersecurity courses and curricula. The methods and tools can have different intensities and forms, such as class-based activities, class research projects, and capstone projects. Moreover, the discussion will focus on the barriers and obstacles to incorporating research activities in undergraduate curricula.

Gibbs, Nathan

Institution: *OH - Capital University*

Discipline: Biology

Author/Contributors:
Jia Campbell *Nathan Gibbs* *Christina Mickelson*
Katherine Freeland

Abstract Name: **Assessment of At-Home Genetic Testing Kit Consistency Between Identical Twins**

Since their arrival on the market in the early 2000s, direct to consumer (DTC) genetic testing kits (at-home kits) have exploded in popularity. As the industry has continued to grow, questions have emerged over the accuracy and consistency of the results of these ancestry reports. Despite claims by all companies studied here of over 99% accuracy, previous research in this lab has shown significant inconsistencies between the results provided by each company. Of 42 individuals previously tested, 39 had large discrepancies in their genetic ancestry categories from company to company; results varied by up to 40% for some participants. The goal of the current study was to examine the DNA of identical twins to determine if these testing discrepancies exist within companies (since the DNA of identical twins should be the same) or only between them. The same three genetic testing companies that were previously studied were used here - Ancestry, 23&Me, and MyHeritage. To date, five sets of identical twins have received full results, and several additional sets of twins are in process. Results have remained consistent with the previous study, with discrepancies between ancestry categories reported by each company. Surprisingly, in addition to the discrepancies between companies, differences were found between twins in data reported by the same company. No set of twins had results that completely matched. In some twins, one individual was noted to have an ancestry category that the other didn't have at all. Given the claims of near-perfect accuracy reported by the companies, and the fact that some of them also market genetic health screenings for certain diseases and health conditions, these inconsistencies raise serious ethical concerns about the way on which they market and report data to under-informed consumers.

Gibson, Alexandra

Institution: *AZ - Northern Arizona University*

Discipline: **Biology**

Author/Contributors:
Alexanda Gibson *Jessica Guzzo* *Emily Luberto*
Meagan Owens *Katrina Urrea* *Megan Wilkinson*
Karen Haubensak

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After threemonths of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Gibson, Julia

Institution: *PA - Duquesne University*

Discipline: **Biology**

Author/Contributors:
Julia Gibson

Abstract Name: **Investigating the Function of RECQL in Herpes Simplex Virus Type-1 Infection**

Herpes Simplex Virus Type-1 (HSV-1) is a prevalent human pathogen, infecting over half of the U.S. population. While the most common symptoms of infection are cold sores, more severe cases can cause genital herpes, herpes keratitis, or encephalitis. While HSV-1 is a common and potentially deadly virus, we do not fully understand the infection process. We do know that HSV-1 utilizes both viral and cellular factors during infection and replication, several of which have been identified. Through previous studies in our lab, we discovered that human RECQL, a helicase protein involved in the DNA damage response, associates with the HSV-1 genome during DNA replication. In uninfected human cells, RECQL plays a role in restart of stalled replication forks, homologous recombination, and base excision repair. However, the role of RECQL in HSV-1 infection has not been studied. To determine the effects of RECQL knockdown on HSV-1 infection we created an inducible shRNA knockdown cell line. We found that in the absence of RECQL protein, the amount of virus produced per cell increases. Other proteins involved in the DNA damage response are seen to act in an intrinsic antiviral defense against incoming HSV-1 genomes. We hypothesize that RECQL may be part of this antiviral response. Some proteins are degraded by HSV-1 protein ICP0, a ubiquitin ligase that allows the virus to evade the host cell's antiviral defenses. In the future we will investigate a potential relationship between RECQL and ICP0 and determine the effects of RECQL overexpression on HSV-1 infection.

Gibson, Sophia

Institution: *MN - St. Catherine University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Sophia Gibson,
Maya Isabel Villafuerte

Abstract Name: **Welcoming The Dear Neighbor: The Catholic Interracial Council Twin Cities**

Conversations surrounding racism both on individual and systemic levels continue to be at the forefront of American society. Our research aims to understand the tensions between individual and systemic solutions to racial change in the context of the Twin Cities during the 1950s and 60s. Though implications of racist thought have permeated the country for centuries, the 2020 murder of George Floyd and subsequent recent racial unrest in Minnesota has increased conversations concerning systemic change. To understand how systemic change will look in the future, we must first understand the efforts of the past. Our research centers on one national organization striving for change during the mid 20th century, the Catholic Interracial Council, also known as the CIC. The Twin Cities chapter of the CIC (CICTC) made great headway with community action and education during the beginning of the civil rights movement, but fell short of lasting systemic change. Though many efforts were made within the community, no legislature was passed to further their mission of racial equity. To understand CICTC contributions in conversations surrounding discrimination, inequality and needed change, we conducted an oral history interview with CICTC founding member, Patricia Caponi. Following the interview, we examined some of her personal documents from her time in the CICTC which included newsletters, correspondence, and informational pamphlets. Through analyzing these sources, we were able to see the challenges in working to alleviate systemic racism, such as the lack of supportive legislature and community push-back to anti-racist policy. Analyzing the CICTC's work demonstrates the possibilities and limits of individual efforts in anti-racist efforts and the importance of systemic change.

Gierl, Matthew

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Psychology/Neuroscience

Author/Contributors:
Matthew Gierl *Jordan Snyder* *Ezer Kang*
Christophe Mbonyingabo

Abstract Name: **Does Revenge Toward Genocidaires Mediate the Relationship Between Exposure to Genocide Events and Traumatic Stress in Survivors of the 1994 Genocide Against the Tutsis?**

As the 30th anniversary of the 1994 Genocide Against the Tutsi looms, adverse mental health outcomes and disrupted relationships remain, despite considerable progress in rebuilding communities and work in mental health. Many studies have indicated that adverse mental health outcomes, such as posttraumatic stress disorder remain elevated in survivors of the genocide. Understanding factors that may maintain adverse mental health outcomes may be beneficial in fostering healing amongst survivors of the genocide. Previous research has documented the dose-effect relationship between exposure to potentially traumatic events and traumatic stress symptoms. Additionally, previous literature has indicated that revenge could be one avenue in which traumatic stress symptoms could be maintained. Specifically, past work has found revenge to be associated with higher levels of traumatic stress symptoms. Conversely, forgiveness, a distinct but related concept to revenge, has been found to mediate the relationship between exposure to traumatic events and traumatic stress symptoms. The aim of the current study is to investigate the relationship between feelings of revenge, exposure to genocide events, and traumatic stress symptoms in Rwandan genocide survivors. We hypothesize that feelings of revenge will mediate the relationship between exposure to genocide events and traumatic stress symptoms. Specifically, we hypothesize that higher levels of exposure to genocide events will berelated to higher levels of feelings of revenge and that higher levels of revenge will be related to higher levels of traumatic stress symptoms. To test this hypothesis, we will analyze previously collected data from a community survey of over 300 genocide survivors. Results could inform future interventions addressing adverse mental health outcomes in Rwanda.

Giese, Eric

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Eric Giese,
Colin Long

Abstract Name: **Reconsidering Wisconsin's Northern Kettle Moraine: How a Novel Look at the Interlobate Zone Yielded New Glacial Age Constraints**

Modelling environmental responses to a dynamically changing global climate is critical to understanding the potential challenges humans may face in the near future. These models are limited by the accuracy and robustness of data that reflecthow past environments changed when Earth faced similar dramatic shifts in climate.Between 23,000-11,000 years ago, Wisconsin rapidly transitioned from a largely ice-covered landscape to one similar to today's. As the region warmed, flora and faunal migration would have necessarily kept pace with the melting ice or face losing their zonal niche. How rapidly this forcing occured, and how this reflects on future environmental responses, is not yet fully understood. Retreating continental glaciers left behind temporal markers in the form of moraines that have provided a cursory timeline of glacial retreat and floral advance. However, age constraints on glacial moraines are incredibly elusive andeven the best models of glacial retreat in Wisconsinare based on limited data. Using new cores from a lake in southeastern Wisconsin, this study obtained the first known series of robust radiocarbon dates that reflect glacial retreat, readvance, and final retreat in the corridor known as the Interlobate Zone. Furthermore, these new temporal markers reflect a previously unknown anomaly in local ice extentthat will significantly impactthe glacial models in this part of the state and may impact how retreating ice of the Greenland and Antarctic ice sheets are modeled. Ongoing study of the core is working to identify when diatoms, pollen, and phytoliths appear in the core to determine aqueous and terrestrial environments and their changes before, during, and after the readvance. These studies will overlap with previous research on local kettle lake fire history to create a continuous record of changefor the last 30,000 years.

Giesen, Cece

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

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Cady Sartini

Abstract Name: **Home Range and Habitat Selection of Rehabilitated and Released Female Black Bears in Northern Wisconsin**

The Eastern American Black Bear (Ursus americanus americanus) is a valued species among many for its biological, intrinsic, and cultural significance. Black bears are considered habitat generalists, taking advantage of the resources available to them. In the state of Wisconsin, previous studies suggest black bears select for habitats in northern hardwood forests and near beaver flowages. Habitat selection data from rehabilitated and released bears is lacking in Wisconsin, although this is a practiced management technique. The purpose of our study is to investigate the home range and habitat selection of rehabilitated and released female black bears in northern Wisconsin. The rehabilitated yearlings are fixed with GPS radio-collars prior to release, and location data is received every four hours. Habitat data from the received GPS points are compared to habitat data from random locations within the bears' home range (third-order analysis). Habitat data such as landcover type and distance to nearest road, stream, and open water source is collected. Understanding habitat selection of rehabilitated black bears in comparison to previously known black bear selection behavior is important for determining the impacts of rehabilitation and release as a management technique.

Gietz, Harrison

Institution: ***LA - Louisiana State University***

Discipline: Mathematics

Author/Contributors:
Harrison Gietz,
Arnab Ganguly,
Jinpu Zhou

Abstract Name: Bayesian non-parametric learning of stochastic differential equations

Stochastic differential equations (SDEs) are potent tools to model real-world phenomena in various domains, including biology, chemistry, physics and mathematical finance. Accuracy of these mathematical models depend on their proper calibration according to the available data. This in turn requires employing statistical learning techniques to estimate the driving functions of the SDE from an observed trajectory. Previous work in this area has mostly focused on parametric estimation problems,where the underlying assumption is that the forms of the driving functions are completely known up to some finite number of real-valued parameters. While this simplifying assumption works in certain ideal cases, a vast majority of realistic systems require a data-driven approach where the entire driving functions are learnt from the given data. These are, however, infinite-dimensional learning or inference problems (in function spaces), and our work uses a kernel-based Bayesian approach to address them. An important aspect of this Bayesian approach is incorporation of low-cost sparse learning through proper use of various shrinkage priors, while allowing proper quantification of uncertainty through use of posterior distributions. Several examples with different SDEs illustrate the accuracy of our learning scheme.

Gill, Don

Institution: ***IA - Iowa State University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Don Gill JR *Chasity Foster* *Maggie Jirik*
Nancy Tran *Diyorbek Yusupov*

Abstract Name: The effect that amount of video game usage has on maladaptive coping strategies

Previous studies found that more time people played video games, the higher their trait anger (Demirok, 2012). People play video games to assist emotional regulation and escape reality (Sarsenbayeva, 2020), but excessive video game use is associated with maladaptive coping strategies (Maroney, 2019). This study hypothesized that (1) amount of video game play (measured by hours/week) is positively correlated with maladaptive coping strategies; (2) amount of video game play is negatively correlated with cognitive reappraisal and expressive suppression, and (3) those who use games as a source of escapism will have a lower level of cognitive reappraisal and expressive suppression, and higher levels of anger expression. 290 undergraduates (62% females, 77.10% White, Mage = 19.07) answered online questionnaires of Game Addiction scale, Coping Strategies checklist, Difficulties in Emotion Regulation Scale, Emotion Regulation Questionnaire, Videogame use measure, and Anger Expression. Hours of video game use per week were positively related to escapism and expressive suppression positively, and negatively related to distraction-based coping strategy (allps < .01). There was weak evidence for a negative relationship between amount of video game play and avoidance coping strategy(p=.09) and no evidence of a relationship between amount of video game play and cognitive reappraisal. (p=.37). Escapism was negatively weakly associated with cognitive reappraisal and positively weakly associated with expressive suppression (allps < .05), and there was no significant relationship between escapism and anger expression(p=.25). Results show there is a relationship between video game usage, escapism and emotional regulatory processes that both support and present contrary evidence to the original hypotheses. Future research should evaluate the nature of these relationships and determine the direction of causality using experimental or longitudinal study designs, such as whether using video games as escapism can potentially cause maladaptive coping strategies.

Gilland, Keith

Institution: ***WI - University of Wisconsin-Stout***

Discipline: FAN Abstract

Author/Contributors:
Keith Gilland

Abstract Name: Embedding authentic inquiry in a first year environmental science course: Lessons learned on group work, student self efficacy, and being comfortable in your own teaching skin

Project management and cooperative group work are considered important parts of many ecological curricula but are often viewed negatively by students. Here, I focused on three components related to group work in UW-Stout's introductory Plant Biology class, the first class in the major taken by students in the Environmental Science program. Based on several years of comments recieved in student evaluations across multiple classes, I focused on three parts of the student experience (general attitudes toward cooperative learning, feelings and attitudes toward their group mates, and feelings of self-efficacy as scientists), while developing an authentic course inquiry project meant to introduce skills that would later be refined elsewhere in the curriculum (plant identification, Geographic Infomation Systems) while providing useful infomration for the campus (locations of populations of invasive plants). Working in teams, students identified and mapped populations of invasive species on campus and developed a short report their findings. For each segment of the project, students identified their "job" from a set of prescribed roles and completed a questionnaire related to their feelings toward their own and their peer's performance, their feelings about group work overall (SAGE assessment), and their feelings of self-efficacy (Baldwin's self-efficacy assessment). Generally, students felt an increasing sense of self-efficacy as the project progressed, and attained competency in the desired technical skills, but attitudes toward group work remained largely unchanged. In future offerings of the course, I will work with different group strategies to attempt to find a setup that is both beneficial to students while allowing me as the instructor to feel "comfortable" and "authentic" in leading learning activities.

Gillett, Philip

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Connor McKeown,
Katherine E. McCallum,
Chloe Meyer,
Philip Gillett,
Rahul Gomes,
Nora Mitchell

Abstract Name: A Deep Learning Approach to Automate the Analyses and Prediction of Function for Poplar Stomata

In plants, stomatal pores regulate the intake of carbon dioxide that enables and powers photosynthesis and the loss of water from the surface of leaves. Variations in stomatal size and density can thus reflect novel strategies that balance water loss with photosynthetic capacity. Poplars are an emerging model system for studying adaptation to climate change in tree species and exhibit variation in stomatal characteristics. Currently, many approaches used in collecting stomatal morphometric data require the manual measurement of microscope images of stomatal imprints by a trained individual using software such as ImageJ.The process can be extensive, inaccurate, and slow down long-awaited results after collection. Our process follows similar methods shown in Gibbs et al. (2021) but differs in the deep learning processes used. This study implements a deep learning method to automate the process of morphometric data collection. Images collected for our approach are accurately labeled using open-source software to identify stomatal pores and guard cells. The preprocessed images along with the generated segmentation masks are fed into the deep learning model. For our study, we will use UNet to segment and measure pixel values that correspond with measurements of stomatal cells and image region properties to measure the stomatal density from prediction. All experiments will be conducted on the University of Wisconsin-Eau Claire BOSE supercomputing cluster. These measurements can be combined with additional climatic data to understand quantitative measures of plant health and viability across geographical and environmental scales.

Ginnab, Yaseen

Institution: ***TN - Middle Tennessee State University***

Discipline: Biology

Author/Contributors:
Yaseen Ginnab,
Frank Bailey

Abstract Name: Analyzing the Ability of Astragalus Tennesseensis to Accumulate Selenium

Selenium is a metalloid and an essential micronutrient but is toxic in high amounts. This element is naturally occurring in many soils and can be accumulated by some plants. When accumulated in high amounts, generally considered to be above 1000 ug/g dry weight, the plant becomes toxic if eaten by animals and is called a selenium hyperaccumulator. A study by Ohlendorf et. al. showed that a diet high in selenium given to aquatic birds resulted in severe and fatal birth defects, often involving developmental deformities of various organs and external body parts. Plants that can accumulate selenium do so by replacing sulfur with selenium in the amino acids within their tissues. Astragalus is one of the largest genera of plants, with estimations of around 3000 species. This genus is known to have many selenium hyperaccumulators; among these, one of the most well-studied species is Astragalus bisulcatus, which is often used as an indicator plant to detect seleniferous soils. Astragalus tennesseensis grows in Tennessee and surrounding states and is often found in Middle Tennessee's unique cedar glades. The environments this species typically grows in contain low amounts of selenium, compared to A. bisulcatus growing in the western United States in highly seleniferous soils. This study aims to investigate whether A. tennesseensis can accumulate selenium. This species will be grown alongside A. bisulcatus to compare their reactions to varying levels of selenium treatment (0 mg selenium/kg dry soil, 1 mg/kg, 10 mg/kg, and 100 mg/kg). Sodium selenate (Na2SeO4) will be used for treatment. After treatment has been completed, the plants will be digested in nitric acid and analyzed by atomic absorption spectrophotometry to determine the selenium content.

Giordano, Megan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Madelyn Kruckeberg *Megan Giordano*

Abstract Name: Goal Attainment Scaling and Use of Retrieval Based Practice

Using goal-attainment scaling to promote the effective use of retrieval-based learning strategies among college studentsBackground: Retrieval-based practice is a learning strategy built upon an extensive body of research demonstrating that frequent and intentional recall of information results in more robust learning and memory over time. (Agarwal et al., 2020; Carpenter; Agarwal, 2020). Unfortunately, retrieval-based practice is underutilized among college students (Pinheiro et al., 2022). Methods are needed that help students successfully incorporate retrieval-based practices into their study routines. Goal attainment scaling (GAS) has been found effective in facilitating skill acquisition by employing self-monitoring to promote goal attainment (Hoepner et al., 2021; Turner-Stokes, 2009). The current study investigated the effectiveness of GAS in supporting online college students' independent use of retrieval-based practice.Methods: Students in two online undergraduate courses in communication sciences and disorders were taught how to use retrieval-based practices and given weekly tips on how to apply them to specific course content throughout the semester. Additionally, all students from one course utilized GAS to track their progress in acquiring retrieval-based practice as a skill. Students from both classes completed start-of-course and end-of-course rating scales that assessed self-efficacy related to the use of retrieval-based practices and the likelihood of continued use of the strategy in future courses. Rating scales were then used to evaluate the effectiveness of GAS in promoting retrieval-based practices among college students.Analyses have not yet been completed. We expect both groups to improve in their knowledge of and use of retrieval-based practices, although we anticipate the GAS group to improve at a higher rate and be more likely to use the strategy in the future. Relationships will be discussed related to the variables being investigated in addition to applications of findings that may help college students effectively utilize retrieval-based learning strategies.

Girdeen, McKenna

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Megan Schmitz *Emmeline Liske* *McKenna Girdeen*
Nicholas Phillips

Abstract Name: The Life and Music of Florence Price

Born in Little Rock, Arkansas, Florence Beatrice Smith Price (1887-1953) was America's first significant African American woman composer. The purpose of this lecture-recital is to uncover how Price's compositions are a historic symbol for traditional black composers today, revisit her significance in music history, and provide a biographical overview of her life through the exploration of her piano compositions and experiences composing as a Black woman. Graduating with a double degree in solo organ and piano teaching from the New England Conservatory of Music in 1906, Price was deeply influenced by mentors who helped reinforce an African American identity in her music. While living through the Great Migration and the Great Depression, Price slowly gained recognition throughout her lifetime as a prominent figure in the black community by writing piano compositions that included the "juba dance" and other Afro-American characteristics. Linda Rae Brown's findings in The Heart of a Woman: The Life and Music of Florence B. Price, reveal Price faced issues with conflicting roles both as a woman and a composer. With increasing racial tensions in the late 1920s, Price was denied access to professional music organizations such as the Arkansas Music Teachers Association. Although she lived a moderately private life, analyzing gender and race-based marginalization through the lens of Black feminism illustrates how Price challenged prejudicial social structures and contexts. Price challenges these notions by advocating for herself as a Black woman composer, eventually paving the way by fusing Euro-American structures with elements of her own American cultural heritage by emulating plantation melodies and African American folk melodies in her music. This lecture-recital is part of a growing momentum to give further attention to Price's piano compositions and life, which deserve continued further attention from scholars, teachers, and pianists.

Girton, Jack

Institution: ***IA - Iowa State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jack Girton

Abstract Name: Image Processing and Molecular Modeling to Understand Nanovaccine Release in Colitis and Colon Cancer

In a living cell/tissue Reactive Oxygen Species (ROS) can be produced in excess due to both environmental and endogenous factors. ROS target the mitochondria and can cause allergic reactions, damage DNA, cell death, and even cancer. This microenvironmental condition is known as oxidative stress. One major consequence of oxidative stress is ulcerative colitis and colorectal cancer. Using the ROS-sensitive thioketal chemical linker in an ROS sensitive nanoparticle (a lipid shell with drug inside) has been designed to deliver the drug only at the site of infection (i.e., diseased colon with high ROS). The linker breaks to release the drug only at the site of high ROS in the gastrointestinal tract (food pipe) due to colitis or cancer. By attaching a fluorescent molecule (IR-780 iodide) to the lipid shell (with and without drug) we collected experimental data on (a) the location,(b) rate and (c) effect of the drug release – in healthy and infected mouse. Image processing of glowing (infected)/ non-glowing (healthy) mouse colon at successive time points using Python3 scripts we correlated RGB values of each pixel to the epi- fluorescence scale – corresponding to rate of drug release. To gain deeper biophysical insights of the molecular mechanism of drug release in the colon, we will create an all-atom molecular model of the lipid vesicle with and without the drug contained in the cavity. To mimic the in vivo colon conditions, we will apply exact salt concentration around the lipid shell (nanovaccine), and then use molecular dynamics simulations (1000 nanoseconds) with the GROMACS force-field to simulate and predict the mechanism at work. Using the results from the simulation we can record time needed for drug release as a function of ROS concentration in the colon. This will help us quantify nanovaccine performance and design better nanovaccine drugs for personalized therapeutics.

Gishto, Redi

Institution: *MI - Wayne State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Redi Gishto *Alana Conti* *Min Wu*
Scott Lloyd *Kelly Bosse* *Daniela Cukovic*
Alan Dombkowski *Veronica Piggott* *Kiera Borthwick*

Abstract Name: **BRAIN/BLOOD-BASED EXTRACELLULAR VESICLE BIOMARKER QUANTIFICATION FOLLOWING TRAUMATIC BRAIN INJURY AND PHOTOBIOMODULATION THERAPY IN MICE**

Of the 1.5 million people experiencing traumatic brain injury (TBI) in the US annually, up to 80% experience debilitating pain symptoms. TBI induces neuroinflammation and oxidative stress, which promote post-injury hyperalgesia. While opioid-based therapies are the most common treatment for post-injury pain, their chronic use can exacerbate pain symptoms, potentially due to enhancement of neuroinflammation and oxidative stress. Therefore, it is critical to identify non-opioid based treatment for post-injury pain treatment. Photobiomodulation (PBM) light therapy has shown promise in reducing pain sensitivity, oxidative stress, and neuroinflammation in our experimental TBI studies. However, mechanisms by which systemic exposure to PBM affects neural processes related to TBI and pain are unclear. We hypothesize that extracellular vesicles (EVs), cell-secreted, lipid-bound particles enabling cell-cell communication, mediate the antioxidant/anti-inflammatory effects of PBM, as EVs transport antioxidant/anti-inflammatory cargo. To test this, C57Bl/6 mice were given one closed-skull impact or sham (control) surgery. One day post-surgery, a subset of sham/TBI mice received PBM for 7 days using a handheld LED panel (670 nm, 50 mW/cm2, 90 sec/day). Brain tissues and serum were collected on days 7 or 30 post-injury. Using enzyme-linked immunosorbent assays (ELISA), levels of two EV surface markers, CD63 and CD81, were quantified to reflect EV quantity. TBI significantly reduced serum CD63 levels by 7 days post-injury, compared to sham, regardless of PBM exposure, with no effect of TBI or PBM at 30 days post-injury. No changes in CD81 levels in the prefrontal cortex or the dorsal hippocampus 7 days post-TBI were observed. Together, these data suggest that TBI reduces early circulating levels of EVs, but that neither TBI nor PBM affect brain biomarker levels at the time points examined. Further studies will examine EV content which may reveal potential mechanisms by which EVs may mediate oxidative stress and/or neuroinflammation after TBI and PBM exposure.

Giwojna, Cassandra

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassandra Giwojna,
Rebekah Fetting

Abstract Name: **Animals' Impact on Stress**

The majority of today's students are stressed in some way, and research suggests that animals are a good way to manage stress levels. With anxiety and depression on the rise, programs are seeking support for students in the stress-filled school life. Some researchers have found that bringing in therapy animals has been a good way to lift the spirits of the students. Animals have been used in therapy as early as the 18th century (Chu et al., 2009) and have been shown to ease isolation. Over 98% of full-time students are stressed, and 86% of students find improvement in domestic animals. Animal-assisted programs are still being researched, but evidence shows that there is a positive influence towards stress in many students. This research attempts to disclose the relationship between pet interaction and the level of stress the person feels. The results show that a majority of students have reduced stress after interacting with a domestic animal.

Gland, Clara

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

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Claire Kidwell *Clara Gland* *Bryn Stewart*
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Rebecca Sheetz *Megan Gawlitta* *David Leland*

Abstract Name: Smartphones, Attention, and Brain Electrical Responses

Given concerns about how distracting smartphones can be, we are interested in how they affect attention-related brain electrical activity. Previous research suggests that the mere presence of one's smartphone can negatively impact behavioral performance on an attention-related task. The aim of our ongoing study is to investigate whether simply having one's smartphone present and visible (although shut off) influences attention-related EEG (electroencephalographic) activity. We are assessing this in two ways. First, subjects perform an oddball task, which requires attention and responses to occasional target stimuli ("oddballs") among many task-irrelevant stimuli ("standards"). The P3, a late component of the event-related potential (ERP), is typically larger to oddballs (which receive more attention) than standards; we predict an attenuation of this oddball effect in the presence of one's phone versus a control non-phone object (tile). Second, we are looking at EEG power in the beta range (13-30 Hz) as subjects passively view their phone versus the control object. Since beta activity is positively correlated with alertness and attention, we predict greater beta power in the phone condition. Furthermore, we predict a correlation between beta power in response to one's phone and attenuation of the P3 oddball effect by one's phone; that is, the more attention is garnered by one's phone the more we think their phone will distract from a phone-irrelevant attention task.Preliminary data suggest increased beta activity in the presence of the phone and replication of the classic P3 oddball effect, but are unclear about an impact of smartphone presence on P3 amplitude.

Glaves, Savannah

Institution: ***KS - University of Kansas***

Discipline: International Studies

Author/Contributors:
Savannah Glaves

Abstract Name: What are You Watching? Chinese Soft Power Influence Seen Through Taiwanese TV and Film Habits

China has attempted to increase soft power influence globally in recent years, largely through popular culture endeavors. This project will explore whether Taiwanese people perceive China positively or negatively by analyzing television and viewing habits. Many researchers have focused on how Chinese soft power influences Asian countries and their perceptions of China, but there has been little focus on how China influences Taiwan and therefore how Taiwan perceives China. The research will utilize the theory of soft power from a media standpoint. The data will consist of structured interviews and cross-sectional surveys with Taiwanese students and teachers from National Taiwan University (NTU). Upon finding commonalities in the data through thematic coding, the project will then discuss the likely reasons for these trends. The data could reveal Taiwanese people do not often watch Chinese television, therefore demonstrating they perceive China negatively. If Taiwanese people perceive China negatively, then these findings would indicate a need for change of focus in Chinese policy and advertising techniques to foster better relations.

Glazier, Ryan

Institution: *OK - University of Central Oklahoma*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ryan Glazier,
Kyri Funderburk,
Matthew Plant

Abstract Name: **Development of a Wound Infection Detection Device**

An infection within a wound is a devastating circumstance that can potentially turn a simple graze to a multi year long healing process. The latest methods for wound infection detection are cumbersome and time consuming. These practices often need to undress the wound and leave it exposed for a few seconds or up to an hour. Undressing a wound is counterproductive to the healing process and this small window of exposure can possibly result in an infection in itself. There is a need for a tool that allows for active infection detection that causes very little to no compromise to a wounds healing environment. The device we propose is placed amongst the gauze whenever a wound is initially dressed and implements an array of sensors to collect a wide range of data. The type of data we plan to collect is pH, pressure, moisture, and temperature. We also want to have an integrated RFID or WIFI module so that this data can be wirelessly collected from the device. The specific methods involved for this developmental project start with designing and testing the responses of multiple sensors in an infected wound environment compared to a healthy environment. This is done so that a reference point can be made when a healthy wound transitions to an infected wound. Currently, progress is being made towards gathering preliminary data and calibration of our sensors for our design. Although the project is still in its early stages, It will be beneficial to observe the outcomes from the system in simulated wound environments to provide a baseline for further research and applications.

Gleason, Seth

Institution: *MD - University of Maryland College Park*

Discipline: Business

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Benjamin Bral,
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Kyle Truong

Abstract Name: **Detecting Bias in Intelligent Autonomous Hiring Systems**

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Gleaves, Shelby

Institution: *TN - University of Tennessee at Knoxville*

Discipline: **Business**

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Shelby Gleaves,
Avery Martin,
Young Lee

Abstract Name: **Identifying the Customer and Purchase Motivations at the New Harvest Market**

Previous studies have observed consumer behavior patterns at various farmers' markets across the United States. However, this particular study focuses on the consumers at the New Harvest Farmer's Market in Knoxville, Tennessee. This farmer's market in particular is similar in size and location to other farmer's markets in the region, which makes the findings more applicable. The method used in this study was intercepting with a paper and pencil survey. We surveyed 49 New Harvest Farmers' Market customers out of a total of 246 attendants (during the time span we were there). The mean age was 38.9 years old. The respondents were white and both their education levels and income were greatly dispersed. Half of the respondents were from four main zip codes (37918, 37917, 37924, and 37931). Only 5 respondents answered that they are recipients of SNAP or WIC. The interpretation of the results is most respondents attended the market for the perceived quality of food rather than a sense of community. This was unexpected since we thought a small market would have a stronger sense of community. This research informs other markets in the region that an effective marketing strategy could be highlighting the quality and origins of the food in marketing efforts rather than trying to create a sense of community.

Glenna, Lauren

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Maya Frodl,
Saige Tichy,
Lauren Glenna,
Tatiana Bobrowicz,
Sophie Gardiner

Abstract Name: **3D Printing to Improve Patient Outcomes for Mini-Thoracotomy Aortic Valve Replacements and Mini-Mitral Valve Repairs**

Aortic valve replacement (AVR) was established in the 1960's and has become a routine therapy to treat patients with severe aortic valve dysfunction. AVR is usually performed using a full sternotomy and cardiopulmonary bypass support. Since the late 1990's, minimally invasive procedures have been developed for aortic valve surgeries, such as the mini-thoracotomy AVR. These less invasive procedures claim reduced postoperative complications, shorter lengths of stays in the hospital, and lower mortality. However, the minimally invasive nature may provide challenges in the viewing of patient anatomy during the procedure. This project will provide the 3D printing capabilities needed to investigate if using 3D printed anatomical models for pre-operative planning and/or patient education will result in better patient outcomes for mini-thoracotomy AVR surgery, particularly in those with thoracic abnormalities. For selected patient cases, the Mayo Clinic Luther Campus will provide UWEC researchers with DICOM files for segmentation and 3D printing. The UWEC research team will perform the segmentation and provide the physical 3D anatomical model with initial feedback on accuracy from Mayo physicians. Ultimately, the Mayo Clinic collaborators will evaluate the effectiveness of using the 3D models in patient outcomes as well as patient education on the procedure.

Glodowski, Lillian

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Lillian Glodowski *Robert Lodge*

Abstract Name: **Geochemistry and petrography of the volcanic stratigraphy and syn-volcanic intrusions at the Lynne Zn-Cu-Pb Deposit, Oneida Co., Wisconsin**

This project constrains the volcanic and tectonic setting at the Lynne Zn-Cu-Pb deposit in Oneida County, Wisconsin and improves regional metallogenic models in the Penokean volcanic belt. The Lynne deposit, discovered in 1990 by Noranda Exploration, is one of many volcanogenic massive sulfide (VMS) deposits located in northern Wisconsin. The VMS depositional environment of Wisconsin is currently interpreted as continental back-arc volcanism which formed as the Pembine-Wausau Terrane accreted onto the Archean Superior Craton during the Paleoproterozoic Penokean Orogeny (1.8-1.9 Ga). However, the extent of Archean basement and its influence on metallogeny of VMS deposits is poorly constrained. Samples of the least-altered volcanic and intrusive rocks were obtained while re-logging ~2900' of Lynne deposit drill core and were prepared for geochemical and petrographic analyses. The volcanic units at the Lynne deposit were previously divided into upper and lower rhyolite/dacite units based upon their stratigraphic position relative to the ore horizon. Major and trace element geochemistry and petrographic observations from these volcanic units reveal no petrochemical difference between the upper and lower strata indicating that VMS formation is not associated with transitioning geodynamic settings, but rather is a subsurface replacement of volcanic facies. Intersecting the Lynne deposit are fine grain felsic dikes and a large coarse grain granodiorite pluton at the bottom. These intrusive rocks are geochemically indistinguishable from the volcanic host rocks which suggests they are a part of the same magmatic system. Additionally, the geochemical similarities to the felsic volcanic rocks and lack of contact metamorphic aureole suggests the granodiorite is the syn-volcanic intrusion that helped drive hydrothermal circulation. Continued geochemical and geochronological analyses will allow for improved metallogenic models and tectonic interpretations of similar deposits across the Penokean Orogeny.

Glover, Ashley

Institution: *KY - University of Kentucky*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ashley Glover,
Hannah Williams,
Kathryn Saatman

Abstract Name: **Sex Differences Exist in the Dendritic Complexity of Adult Born Hippocampal Neurons**

Following a traumatic brain injury (TBI), adult hippocampal neurogenesis is stimulated. Hippocampal neurogenesis is linked to memory and learning performance. Traditionally TBI studies have almost exclusively focused on male mice. Sex differences exist in the regulation of neurogenesis and need to be examined as a physiological variable in posttraumatic hippocampal neurogenesis. We used transgenic reporter mice to genetically label neural progenitor cells to examine sex differences in the regulation of adult neurogenesis and in neuron morphology. Naïve mice received tamoxifen injections at 8 weeks of age. After waiting 6 weeks to allow neurons to mature, mice were euthanized. Here we investigate the number of mature neurons in the dentate gyrus of male and female mice. There is no significant difference in the overall numbers of mature neurons between male (n=6) and female (n=10) mice. To assess dendritic complexity, Scholl analysis was used to examine dendrite length and branching complexity. Conclusions for this study, although there are no significant differences with overall granule cell counts, sex differences exist in dendritic complexity in naïve mice. Naïve male mice exhibit less dendritic complexity than naïve female mice at 50-100um from the cell soma. This is important to consider when examining dendritic complexity after TBI between sexes.

Godin, Emily

Institution: *AZ - Northern Arizona University*

Discipline: Education

Author/Contributors:
Emily Godin

Abstract Name: **A Case Study Analyzing Climate Change Curriculum Implementation in Flagstaff Middle Schools**

Data explicitly supports that Earth is facing a climate crisis, yet Arizona Science Standards severely underrepresent and suppress climate change causes, severity, and solutions. These vague standards leave interpretation open to individual districts, schools, and teachers. This qualitative case study identifies what type of curricular implementation yields the deepest student understanding of climate change causes, severity, and solutions, and how successful it is in preparing middle school students to solve the future climate crisis. Data was collected in six sixth grade classrooms representing six different specialized programs in two Flagstaff Unified School District (FUSD) middle schools, and four field expeditions at Camp Colton, a four-day environmental camp offered to all sixth grade students in FUSD. Student surveys, semi-structured teacher interviews, focused observations, and curriculum comparison revealed differences in students' depth of climate change comprehension and teacher interpretation and implementation of Arizona Science Standards. Teacher surveys and observations at Camp Colton revealed that the preparation provided does support students in overcoming psychological barriers to climate mitigation. Iterative thematic coding analysis and statistical significance of results between programs have been conducted to quantify the results. In analyzing FUSD middle schools' application of Arizona Science Standards and delivery of climate change concepts, there is potential to reform curriculum and inspire other schools to do the same.

Goeden, Allyson

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Mathematics

Author/Contributors:
Allyson Goeden,
Jill Kittelson

Abstract Name: **Relating Patterns in Mathematics & Statistics Tutor Center Use to Student Success**

Our research explores usage patterns of the mathematics and statistics tutoring services provided by a regional comprehensive university, and how these patterns relate to student success. Tutor service is available at no charge to students and supports 100- to 200-level courses and is staffed by undergraduate and graduate students. General trends are explored, and statistical models are built to identify connections between student success and frequency of attendance. Our data set consists of date and timestamp information per student visit to the mathematics and statistics tutoring center at a regional comprehensive university during the Spring 2022 semester. The visit information is joined by ID number to other details (class standing, GPA at the semester of interest, demographic information, major/minor, and overall grade in the class that they received support for). A comparison group of students in the same classes that did not attend the tutoring center during the semester was gathered. The same variables excluding timestamps were recorded for this group. Students are matched between tutoring and comparison groups by similar characteristics (e.g. GPA, major) and analyzed. Statistical models (ordinal and logistic regression) are created to relate student success to how often they attended tutoring. By including a comparison group, we can compare success rates between those who attend tutoring and those who do not. Our research provides a foundation for the university to continue monitoring relationships between tutor center use and student success. Our results highlight how student success metrics link to the tutoring center service provided by the university. Generalized student use patterns and metrics are shared to provide recommendations to better staff the tutoring center and answer other questions. Results will be reanalyzed each semester in the center with additional data. Similar methods can be applied to tutoring centers in other subjects or at other universities.

Goidel, Carrington

Institution: *KY - University of Kentucky*

Discipline: Social Work

Author/Contributors:
Carrington Goidel

Abstract Name: Mental Health Impacts of COVID-19

Background:Previous research has been conducted that shows an array of opinions on vaccination against COVID-19. A qualitative study found that most participants had negating opinions on the reasoning behind vaccination status. The results showed individuals were fearful for possible side effects and concern regarding the reliability.We hypothesized: women would have a higher likelihood of being vaccinated and less likely to have contracted COVID-19. We hypothesized that vaccinated individuals would have worse mental health symptoms throughout the pandemic and, they would be less likely to have an optimistic outlook on the pandemic. We also hypothesized that individuals who contracted COVID-19 would report worsened mental health symptoms and lower optimism regarding the outcome of the pandemic. Last, we hypothesized that the effects of vaccination and contracting COVID-19 would be more pronounced in women.MethodsAn online survey was conducted utilizing an online crowdsourcing program, MTurk. Across the United States, there were n=1,351 participants, 635 men and 766 women. The data used in this study was collected between May 26, 2021, and June 25, 2021. Everyone that completed the main survey was compensated $1.50. ResultsWe examined whether more males or females:· Were more likely to get vaccinated,· Contracted COVID, and· Had an optimistic outlook on the pandemic.We discovered:· Women were less optimistic regarding the outcome of the pandemic.· No correlation between gender and the likelihood of getting vaccinated or contracting COVID.· Individuals who contracted COVID-19 were more optimistic on the pandemic.The relationship between vaccination and depressive symptoms, substance use, and feelings surrounding the impact of COVID was also explored. There's a significant correlation in vaccinated individuals and heightened levels of fearand substance misuse. Contrary to our hypothesis, the results yielded vaccinated individuals didn't have moreoptimism regarding the pandemics outcome.

Goldberg, Alexa

Institution: *NC - Elon University*

Discipline: Mathematics

Author/Contributors:
Alexa Goldberg

Abstract Name: Congruence Subgroups of the Virtual Braid Group

Braid theory is a mathematical field that studies knotted structures in the world around us. For example, hair can be braided and DNA is braided. There are two categories of braids which are distinguished by crossing information. The standard braid group consists of braids with regular crossings (which can be thought of as two roads crossing at an overpass). The virtual braid group has braids with both regular crossings and virtual crossings (which can be thought of as two roads crossing at an intersection). A common theme within braid theory research is generalizing known theories about standard braids and extending those ideas to virtual braids. This project investigates a particular subsection of virtual braids which is well established for standard braids.Two braids are said to be congruent if they are indistinguishable after a translation process through the Burau representation. A useful analogy is to think of the Burau representation as an interpreter that translates braids into another language. Two braids are congruent if they get translated into the same word. For standard braids, the theory of congruent braids is well studied and understood. This project is the first of its kind to study when two virtual braids are congruent.This project is computation-based in nature, requiring an implementation of the Burau representation. Our approach uses computer computation to search for examples of congruent virtual braids. We expect to find that congruence in the virtual setting is much more generic than in the standard setting, which would spark a whole new avenue of investigation.

Golden, Mara

Institution: *NY - Siena College*

Discipline: Social Work

Author/Contributors:
Mara Golden

Abstract Name: **Finding a Sense of Self Through Autoethnography**

This article explores finding a sense of self through an autoethnography. This autoethnography contains a lit review which explains and breaks down how to write an autoethnography. Many people choose their majors because they have a connection to it. There is some event or situation that occurs connecting a person to their major and or future career. This autoethnography will focus on my personal connection to the social work field. While exploring an abusive personal upbringing, I will connect a specific experience to social work theories. These connections will then be analyzed through my social work approach at Albany Medical Center, located in Upstate New York. The results of the research focus upon finding a sense of self in the social work field. The goal is to be able to identify emotions to patient situations, pinpoint specifically where these emotions stem from, and what true emotions I am feeling. The findings of this autoethnography will follow me throughout my time as a social worker. My hope is to leave a piece of work behind for both the Social Work department and the Bonner Program at Siena College. This work will be guidance in how to write an autoethnography for future capstones. For future Social Work students, this autoethnography will be guidance in finding their sense of self in their own social work practice.

Goldstein, Thomas

Institution: *DC - American University*

Discipline: International Studies

Author/Contributors:
Thomas Goldstein

Abstract Name: **Agent, Interlocutor, or Policymaker? The Glasgow Financial Alliance for Net-Zero and the Formation of Private Authority in Global Governance**

What explains the emergence of the Glasgow Financial Alliance for Net-Zero (GFANZ) within the constellation of climate finance actors? More importantly, how might its deepening or decline in private authority impact the global financial industry's mobilization toward systemic decarbonization? Although the current on-target climate finance gap of an annual $2.5 trillion presents a key global governance deficit, the prospect of GFANZ's private authority remains fragile without formal enforcement mechanisms. Moreover, this fragile stage of establishing private authority––and how an organization like GFANZ may possess agency to strategically mitigate challenges and accumulate legitimacy––remains an under-investigated process with implications for the integration of nonstate actors in global institutional architectures. Through a case comparison with the Institute of International Finance (IIF), I trace how this global financial association acquired authority over time, starting as a small data-sharing organization for sovereign debt market lending risk and evolving into a key governance player that harmonizes best practices for international regulatory compliance. I attribute the gradual embeddedness of the IIF's private governance role as a result of the strategic manipulation of its social network power, brokering between private firms and public entities as an interlocutor. Applying this analytical frame to GFANZ, I conduct a formal social network analysis of 81 nodes to visualize its network power and vulnerability vis-à-vis member firms, climate NGOs, UN bodies and initiatives, and other voluntary climate finance frameworks. Although GFANZ's anticipated exercise of authority has gravitated these actors to contribute to and possess a stake in its sophistication––similarly entrenching a broker role––I will trace and synthesize trends in the public climate finance regulatory sphere and GFANZ's private demand to consider how this network structure may transform, and subsequently impinge, its authority.

Goma, Mounkoka Francesca Flora

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Mounkoka Francesca Flora Goma,
Juan Pablo Cubillos Sanchez

Abstract Name: **Hydraulic efficiency of 3d printed static mixers**

Drainage practices are commonly used in Midwestern states to increase crop yield. While this method is very feasible for crop production optimization, it has some unwanted environmental effects. Unfortunately, water that is artificially drained from agricultural sites carries large amounts of nutrients to receiving waters and creates a pollution problem.There are several experimental engineering practices that suggested decreasing nutrient concentration. One of them ison-site treatment filtration of drainage water. Fast and efficient mixing of drainage water with treatment material is the key to this practice. This goal may be achieved viastatic mixers.Static mixers are used incontinuous practices, where they homogenize fluids with no moving parts, making themkey componentsfor filtration processes. Therearedifferent types, but we will focus on them here in theinlinemixer. As they have for purpose to create turbulence that enhances the rapid mixing of the injected chemical into the water stream. We use them specifically for chemical treatment due to the fact they create an injection point for chemicals into water line. This research is devoted to determining the efficiencies of static mixers with different geometries.The goal is to improve filter efficiency by finding the adequate format of inline static mixer for the right task. Hence, every filtration process differs and needsa differentstatic mixer. For this, we are focusing on analyzing, characterizing, and designing a 3D line static mixer. In order to accomplish that we will be using a 3D printer to create models based on the design that we produced and test them based on specific criteria which are based on homogeneity and sediment retainment after mixing.

Gomez, Karla

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Business**

Author/Contributors:
Luke Bjorklund,
Karla Gomez

Abstract Name: **Death and Grief Support in Nursing Homes**

Effective, high-quality end-of-life care should be holistic and encompass practical and emotional care and heightened family involvement. Nursing home staff make every effort to provide effective high-quality care that allows individuals to die with dignity. Effective care during the end of life is important for the individual and their families. The aim of this study is to examine burnout syndrome and grief in nursing home staff when caring for dying patients. Recruitment of the participants was a multi-step process. First, researchers utilized a convenience sampling technique, selecting from 38 nursing facilities utilized as administrative internship sites for students in the health care administration program at a Midwestern University. Next, stratified sampling was employed to select frontline workers from each nursing facility. From each site, in addition to assessing the administrative interns' perspectives, seven other stakeholders were selected (the nursing home administrator, the Director of Nursing, the food; nutrition director, a dietary aide, and three nursing assistants) completed a survey with demographic questions about the nursing facility and questions pertaining to grief support and burnout. Analysis is currently in progress. The data will be analyzed using a descriptive analysis, independent t test, correlation, and logistic regression tests.

Gómez, Rosa

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Education

Author/Contributors:
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Heather Fielding,
Peter Hart-Brinson,
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David Jones

Abstract Name: Understanding the Experience of Students of Color in Honors

Nationally and at UW-Eau Claire, honors programs are increasingly invested in attracting and serving diverse students, creating an environment where all students feel a sense of belonging. However, honors programs often face challenges in recruiting and retaining students of color for a wide variety of reasons, ranging from inequality in the K-12 school system, to the discriminatory effects of test scores and other commonly used admissions criteria, to challenges around social affinity. The Honors Program at UW-Eau Claire made great progress in improving inclusivity about ten years ago, when it moved toward a holistic admissions model— allowing for a more accessible program for students of diverse backgrounds. Building on this foundation, we are aiming to prioritize improved retention of students of color to graduation with University Honors through an equity, diversity, and inclusion structured lens. We use structured interviews to gain an in-depth, nuanced, context-rich account of how students of color understand their identity as honors students, how they experience their honors courses, and how their honors experience relates to their broader experience at the university. After coding the interview transcripts through an analytical and interdisciplinary approach, we have been able to identify main themes or experiences of honors students of color. Many of which are in relation to imposter syndrome, a sense of othering, and an obligatory feeling of sharing personal experiences due to race. We believe that it is due to these main themes, that students of color are not retained at a proportional rate in comparison to their white peers. We hope that this work will contribute to our knowledge of the experience of high-achieving students of color within the Honors Program and aid in the journey of becoming an increasingly equitable program for all current and future students..

Gomez Rodriguez, Yuleny

Institution: ***NC - University of North Carolina at Charlotte***

Discipline: Biology

Author/Contributors:
Jill Olin,
Paola López-Duarte

Abstract Name: Energetic Pathways and Trophic Diversity Among Macroinvertebrate Communities in Saltmarshes

Saltmarsh food webs are some of the most productive and complex ecosystems because they sustain both pelagic and benthic communities. Macroinvertebrates are key consumers that link primary productivity in benthic and pelagic communities to higher trophic levels. The energy transfer among macroinvertebrates in saltmarsh food webs is not well understood. Nonetheless, the food web interactions at the macroinvertebrate level are less understood. The gap in knowledge suggests the need for additional research concerning the energetic pathways and trophic linkages macroinvertebrates contribute to saltmarsh food webs. Macroinvertebrates (amphipods, ants, beetles, copepods, midges, mud crabs, polychaetes,snails, springtails, spiders, ticks, and wasps) were sampled at six different saltmarshes in southern Louisiana. Of these, there are two restored and 4 natural saltmarshes. Stable isotope analysis (SIA) of δ13C (energy source) and δ15N (trophic position) was used to trace the trophic pathways throughout each marsh.The first objective of this study is to quantify the relative contribution of pelagic vs. benthic carbon energy sources among macroinvertebrate taxa. We anticipate that saltmarshes with differing abiotic factors will influence the food web structure through variation in carbon sources. The second objective is to determine the trophic level these taxa occupy. It is anticipated that predatory species will occupy higher trophic levels than herbivorous and omnivorous species. Organisms that occupy higher trophic levels have elevatedδ15N signatures. Understanding the contributions of macroinvertebrate communities is important because of the complex benthic and pelagic ecosystems they help sustain.

Gonu, Sarah

Institution: ***IL - College of DuPage***

Discipline: **Nursing/Health Science**

Author/Contributors:
Sarah Gonu,
Subha Kumpaty

Abstract Name: **Medical Applications of Additive Manufacturing: Anatomical Modeling**

Additive manufacturing, also used interchangeably with 3D printing and rapid prototyping, is utilized in many industries to manufacture objects for consumer use. It is beneficial to the medical field as it can be applied to make educational tools for healthcare students and patients with life-threatening conditions. Insight is also provided with patient-specific medical aids such as implants, prosthetics, and bio-manufactured organs. There is a streamlined process in constructing patient-derived 3D models from DICOM (Digital Imaging and Communications in Medicine) files. The DICOM files were retrieved from The Cancer Imaging Archive (TCIA) through the NBIA Data Retriever and downloaded onto a device. There was, however, a challenge in converting DICOM files into rapid prototyping compatibles. With only basic anatomical knowledge and limited familiarity with radiographic scans, the segmentation portion proved difficult. The software used for conversion was Mimics Research 19.0 from Materialize. DICOM images were uploaded onto the software, and segmentation of a particular body part was performed. Following thorough segmentation, exportation as an STL (Standard Tessellation Language) file was accomplished. Once converted, a certain manufacturing method was applied, and the model was then printed using a selected material (e.g. polymers, ceramics, and metals) to be ultimately used according to one of the indications listed above. In this case, the prototypes are a spine (hard tissue), a kidney model (soft tissue), and an angiotensinogen protein model used for educational purposes.

Gonzales, Kaiulani

Institution: ***CA - California State University - Fullerton***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Lilibeth Martinez,
Kareem Torres,
Paul Tablada,
Ella Ben-Hagai,
Kaiulani Gonzales

Abstract Name: **Comparing Trajectories Toward Activism Amongst Asian American and Latinx Young Adults**

Following the murder of George Floyd, the Black Lives Matter movement inspired an increased awareness of social injustices and racism in America. In this research, we examine how the anti-racism movement that followed this historical event impacted Latinx and Asian American young adults and their social activism. We conducted in-depth interviews with Asian American (n=12) and Latinx (n=12) emerging adults who identified as activists. Utilizing Interpretive Phenomenological Analysis we examined recurring themes in participants' life stories that explained their involvement in activism. We found that both Asian and Latinx participants were motivated to join political-cultural heritage organizations to bridge and integrate their American and ethnic cultural identities. Prejudice against the Latinx community motivated Latinx participants to become involved in cultural-political organizations in comparison to Asian American involvement in organizations alike, which led to an increased awareness of anti-Asian racism. The rise of the Black Lives Matter movement motivated Asian American activists to advocate against Asian discrimination. In contrast, the Latinx participants were more motivated towards coalitional activism for people of color, specifically Black and Brown. This research illuminates the similarities and differences in trajectories toward activism for Latinx and Asian American young adults.

Gonzales, Victoria

Institution: *VA - George Mason University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Steven Tai,
Victoria Gonzales,
Taylor Anderson,
Andreas Züfle

Abstract Name: **Estimating The Path of COVID-19 Using Phylogenetic Techniques**

Genetic data provide a wealth of information about the evolution of organisms and their unique features. When it comes to viruses, genetic data is crucial for surveillance and vaccine development efforts. The COVID-19 pandemic led to the collection of large amounts of genetic data on the coronavirus. With such data, the evolution of COVID-19 has been documented since the onset using phylogenetic trees. Strains that are sampled and sequenced can be placed as leaf nodes in these trees. These strains contain spatio-temporal data about where and when the strain was discovered. Internal nodes connecting each branch represent a relationship between the sample and its ancestor. Unlike leaf nodes, the location of internal nodes can never be known exactly. The goal of this research is to estimate the locations of internal nodes using ancestral character state reconstruction and find the full evolutionary path of COVID-19. We obtained genetic data through GISAID which is a large database focused on collecting and sequencing samples from viruses related to influenza and COVID-19. Our sample size is over 8 million, containing spatiotemporal data and other metadata. GPS coordinate data were extracted by processing the location names. To estimate internal node locations, we used ACCTRAN, a form of ancestral character state reconstruction algorithm that annotates internal nodes using characters from leaf nodes and the tree paths. The results provide a novel estimation of the locations of internal nodes and the full spatial path of the phylogenetic tree which will shed light into generating accurate phylogenetic trees from limited sample data.

Gonzalez, Alyson

Institution: *NC - Appalachian State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Latetia Hoyle,
Alyson Gonzalez,
Carol Babyak

Abstract Name: **Metal Speciation**

Metals in the natural environment exist in multiple forms or species including soluble organic and inorganic complexes, colloids, and free metal ions. According to the biotic ligand model, free metal ions are more bioavailable than other forms and are therefore considered to be more toxic. We studied the speciation of lead, copper, and mercury in the South Fork New River upstream and downstream of a wastewater treatment plant (WWTP) in northwestern North Carolina. Since WWTPs discharge dissolved organic matter (DOM), we expected metals downstream of the WWTP to be bound by DOM, making them less bioavailable but more likely to be transported throughout the environment. Anodic stripping voltammetry (ASV) with a boron-doped diamond electrode was used to quantify free metal concentrations. Surprisingly, in 2021, we found higher concentrations of free metal ions downstream of the WWTP, even though we expected the WWTP to discharge DOM capable of binding metals. More recent work in 2022, however, suggests similar free metal ion concentrations upstream and downstream of the WWTP. The complexing capacity of the South Fork, or its ability to bind free metal ions, is 5 parts-per-billion both upstream and downstream of the WWTP. We plan to study the seasonal variation in metal speciation and if pH or electrical conductivity impacts free metal ion concentrations and complexing capacity. We will also measure total metal concentrations using acid digestion and inductively coupled plasma-optical emission spectroscopy (ICP-OES).

Gonzalez, Ana

Institution: *IL - University of Chicago The College*

Discipline: Sociology

Author/Contributors:
Ana Gonzalez,
Christof Brandtner

Abstract Name: **Green against the odds: Overcoming institutional barriers to sustainability in cities with pragmatic and progressive needs**

If cities are to realize their potential as leaders of sustainability policy and innovation, they require both symbolic resources such as social networks and legitimacy and material resources such as financial and technical support. Although external support mechanisms, including those provided by diverse climate networks, seek to help cities overcome institutional barriers to urban sustainability, previous research on city networks has underestimated the importance of variations among member cities in terms of how serious they are, or can afford to be, about sustainability. We argue that cities taking sustainability more seriously have different material and symbolic resource needs from those that take sustainability less seriously. Drawing on qualitative data from 53 in-depth interviews with city officials across the sustainability-seriousness spectrum, climate network leaders, and other organizations supporting cities, we confirm this variation by identifying that cities tend to face one of two distinct sets of resource needs. Cities with pragmatic needs seek to push the boundaries of political feasibility, and look to peer cities for reassurance; cities with progressive needs aim to push the boundaries of technical possibility and broadcast their achievements to the world. We conclude that different sets of needs require different external support mechanisms, and we note that skewed attention towards cities that already take sustainability seriously limits our understanding of how cities can overcome institutional barriers to climate action, especially when these barriers are particularly high. Our findings offer contributions to literatures on cities and climate change, the institutional drivers of urban sustainability, and network governance.

Gonzalez, Andrea

Institution: *TX - Texas Woman's University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Andrea Gonzalez,
Doriane Jimenez,
Robby Petros

Abstract Name: **Synthesis of Novel Bisamidoxime Compounds for Use as Potential Anti-Cancer Agents**

Novel bisamidoximes have been found to be effective against cancer cells by inhibiting histone modifiers, such as HDAC and HAT enzymes. This inhibitor targets the zinc ion in the histone enzyme'sactive site. In this study, we describe the synthesis of bisamidoximes using a three-step reaction sequence that can be used to prepare the target compounds in multigram yields. The first reaction converts commercially available aldehydes into oximes. The resulting oximewasthen converted to a hydroximoyl chloride, which washighly reactive toward an acyl-substitution reaction. Finally, the hydroximoyl chloridewasreacted with a diamineto form thebisamidoxime. Synthetic details and characterization via NMR spectroscopy will be discussed.

Gonzalez, Cassie

Institution: *OK - University of Central Oklahoma*

Discipline: **Architectural and Interior Design**

Author/Contributors:
Cassie Gonzalez

Abstract Name: **The Growth and Decay of Danchi Housing in Japan**

This study explores the changing functions of Danchi housing in post-World War II Japan. To begin is the examination of how post-WWII influenced political, social, and economic advances that lead to the construction of Danchi housing in the 1950s and 1960s is provided. To understand these changes, it is important to briefly introduce the Japanese political, social, and economic system that generated the need for public housing, including recovery from bombings that caused their housing crisis—as well as rebuilding their economy. By addressing these needs, Japan changed the concept of both Japan and its cities. While pre-WW II Japan harbored an Imperialist reputation, the results of WWII forced Japan to adopt themselves as a constitutional monarchy. In an effort of reflection, post-war Japanese housing served to construct a positive image of Japan and Japanese society. In the contemporary period, after the growth of the economy, Danchi was abandoned with the invention of living spaces within city limits. Danchi housing has become designated areas for citizens that are not easily accepted by the majority of the country. The finding, based on scholarly literature, is significant due to its demonstration of the changing notion in housing and cities generated by evolution of political, economic, and social conditions.

Gonzalez, Leslie

Institution: *TN - Middle Tennessee State University*

Discipline: **Biology**

Author/Contributors:
Yangseung Jeong,
Casey Tomlin,
Leslie Gonzalez

Abstract Name: **Sex and age estimation using CT images in Forensic Anthropology**

Forensic anthropologists reconstruct the biological profile (e.g., ancestry, sex, and age) of skeletal remains for victim identification at a crime scene. However, the preservation state of the skeletal remains may be compromised due to taphonomic factors, which requires alternative methods for assessing morphological features present on the bones. Bone mineral density (BMD) is known to be affected by sex and age of individuals. In this regard, sexual differences in BMD and its relationship with age have been studied. Recently, three-dimensional (3D) imaging technology such as computed tomography (CT) has been popularly used for forensic anthropological examination. The purpose of this study is to generate new methods for sex and age estimation from the Korean skeletal remains using CT data and related software. In this study, a new concept, digital bone loss (DBL), will be introduced. Whole body CT scan data from 240 Koreans (119 males, 121 females) were studied. Mean ages of the samples are 55.1 years and 53.6 years for males and females, respectively. Three open-source software (3D Slicer, Meshmixer, and CloudCompare) were used to calculate DBL. In this study, DBL is defined as the ratio of loss in the number of faces between two 3D models which are reconstructed using different thresholds in the Threshold tool of the Segment Editor module of 3D Slicer. Logistic regression models and linear regression models were generated for sex and age estimation, respectively. This study suggests that DBL can be possibly used as a proxy for BMD and thus, can serve as an indicator for sex and age estimation in forensic anthropology.

Gonzalez, Makena

Institution: *TX - St. Edward's University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Makena Gonzalez

Abstract Name: **Learning to belong again: University belongingness in a post-pandemic society**

Belongingness refers to a feeling of connectedness and acceptance. In a university setting, feeling a sense of belonging can influence a student's attitude about their university and their experiences while enrolled there and is implicated in several factors related to student success. Many factors can influence university belongingness such as peer and faculty interactions. These factors were clearly disrupted during the height of the COVID-19 pandemic when classes abruptly went to an online format, which was shown to negatively influence belongingness. This current study aimed to understand how the return to in-person classes from online/remote classes has impacted belonging. Using the College Belongingness Questionnaire and the Expectancy-Value-Cost Survey of Student Motivation, students were asked to reflect on their experiences during the period of remote learning (2020-2021 academic year) and the year during which all in-person classes resumed (2021-2022). Using paired sample t-tests, belongingness and motivation significantly increased in the 2021-2022 school year from the year prior; however, none of the captured demographic variables were able to explain this increase (e.g., age, gender, living situation, university size, etc.). These results suggest that in-person classes are beneficial to student success, but more work is needed to identify the factors that mediate this relationship. Keywords:belongingness, university, COVID-19, remote learning

Gonzalez, Maya

Institution: *OR - University of Oregon*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maya Gonzalez

Abstract Name: **Empathy Development: Is maternal mind-mindedness rooted in other maternal traits and does it contribute to infant empathy?**

The construct of maternal mind-mindedness is the capacity to accurately perceive and talk about a child's mind. It predicts multiple social-cognitive outcomes for the child, such as fostering a secure attachment relationship and the development of theory of mind. However, whether mind-mindedness supports the development of important processes, such as empathy, is yet to be understood. Empathy can be observed in children at 17 months, through concern for others and hypothesis testing. It's a valuable quality for children to develop due to its positive associations with prosocial behavior. Despite sharing underlying perspective taking characteristics, there is little research examining the influence of maternal mind-mindedness on the development of empathy. This study will examine the effects of maternal mind-mindedness on the development of toddler empathy. Mind-mindedness was measured in a task where 90 low-income and women at risk for parenting problems were asked to free play with their 5-month-old infants. Transcripts were coded for frequency of attuned mental comments directed at their infant. At 17 months postpartum infants and caregivers participated in a task designed to elicit infant empathy. Recordings were coded for infant empathic behaviors. Additionally, as further research needs to examine the maternal factors that contribute to interactional mind-mindedness, this study will also examine the prenatal factors of self-reported perspective seeking in the relationship, maternal Alexithymia, personality, and how these variables might contribute to maternal mind-mindedness and infant empathy. It is predicted that these prenatal traits will contribute to postnatal maternal mind-mindedness, which in turn, will partially mediate associations with infant empathy. This research will further our understanding of how individual differences in empathy arise in infants and how individual differences in maternal mind-mindedness are influenced by other maternal traits. Findings will carry implications for the timing and design of interventions.

Gonzalez-Guzman, Jeydi

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Chemistry/Materials Science

Author/Contributors:
Jeydi Gonzalez-Guzman *Samith Jayawardana* *Gayan Wijeratne*

Abstract Name: Modeling Tryptophan/Indoleamine 2,3 Dioxygenase Activity with Water-Soluble Heme Superoxide Mimics

Tryptophan 2,3-dioxygenase (TDO) and indoleamine 2,3-dioxygenase (IDO) are two unique heme-containing metalloenzymes that catalyze the oxidative cleavage of the indole ring in essential, and energetically expensive amino acid tryptophan during the first and rate-limiting event of the kynurenine pathway. Moreover, these enzymes have been the focal point of numerous recent studies owing to their implications in multiple pathogenic conditions with paramount significance in human health. Despite the intense research and substantial developments in the field, designing bio-inspired model systems of such enzymes has continued to be a challenging endeavor. Such models could serve as powerful tools in shedding light on some of the yet obscure critical mechanistic details pertaining to TDO and IDO. For designing such enzyme model, it is important to consider the functional and structural similarity between the model and the active site of enzyme. However, previously reported synthetic models lack the structural similarity between the active site (heme) and these models with respect to the central metal and/or the ligand. This work depicts a synthetic heme model system that closely mimic the TDO/IDO (bio)chemistry, where a water-soluble iron-porphyrin (meso-Tetraphenylporphine-4,4′,4″,4‴-tetracarboxylic acid, Fe-TCPP) is shown to dioxygenate N-acetyl-L-tryptophan methyl ester substrate that serve as tryptophan model. Fe-TCPP has been synthesized and characterized using various spectroscopic techniques (UV-vis, NMR, MALDI-MS), while the oxygenated tryptophan product has been characterized by LC-MS, NMR, and FT-IR methodologies. In-detail insights into the mechanistic events, and relevance and properties of key reaction intermediates involved during Fe-TCPP mediated tryptophan oxygenation will be discussed in detail. Comprehensive understanding of such reactivity will benefit future attempts in the rational design of salient therapeutic agents, including next generation anticancer drug targets with amplified effectivity.

Good, Shyleigh

Institution: ***VA - James Madison University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Shyleigh Good,
Daniel Downey

Abstract Name: Water Chemistry of the St. Mary's River, Virginia: Liming to Mitigate Acid Rain

St. Mary's Wilderness is a federally designated portion of the George Washington National Forest in Augusta Co., Virginia. The 10,000-acre Wilderness is drained by the St. Mary's River with five major tributaries: Sugartree Branch, Mine Bank Creek, Bear Branch, Chimney Branch, Hogback Creek and a small tributary, Dawn's Branch that drains a wetland. The river and its tributaries experienced loss of aquatic life in the late 1990s due to acid rain. In 1999, 2005, 2013 and March 2022, limestone was introduced into all of the streams in the Wilderness to neutralize acidity. Dosage was ~200 tons evenly distributed to 7 in-stream sites. Water samples were collected at the Wilderness boundary and throughout the Wilderness upstream and downstream of the liming sites. The frequency of sample collection has varied throughout the period of the project. Analytical data for these samples have been used to judge the initial effectiveness of the limestone treatment and estimate longevity. Key water chemistry parameters for the weekly samples showed average increase in pH from pH 5.87 to pH 6.48, increase in ANC from 9.6 to 45.4 μeq/L, increase in Ca / H ratio from 25.7 to 184.7 and decrease in Al from 13 to 7 ppb. The upstream and downstream data pairs for each liming site also showed improvement in water quality. Longevity estimates indicate the Wilderness will not need another limestone treatment for at least 7 years. Due to the Clean Air Act and improved rainfall water quality, it is possible that no future treatment may be needed.

Gooding, Dylan

Institution: *PA - Lafayette College*

Discipline: Political Science

Author/Contributors:
Dylan Gooding

Abstract Name: **Explaining the Domestic Factors That Led to German Dependence on Russian Natural Gas**

With the 2022 Russian invasion of Ukraine and the ongoing energy crisis, security analysts have criticized Germany's energy policies for their long-standing dependence on Russian natural gas. The flaws in Germany's energy policy approach became painfully apparent, with the consequences ricocheting globally. But where did those flaws originate? What domestic factors led to Germany becoming dependent on Russian natural gas?Using historical analysis, process tracing, and policy analysis, this paper analyzes how the lessons drawn from German history, post-Cold War foreign policy, social movements, business considerations, and individual political actors have shaped German energy policy for the past decades. Contemporary German governments believed that trade with the Soviet Union led to the end of the Cold War, reinforcing the belief in change through trade. The peace and anti-nuclear movements pressured German governments towards cooperation with the Soviet Union and prevented nuclear energy from becoming widespread. German companies heavily benefited from cheap Russian natural gas. Pro-Russian political actors, such as previous chancellor Gerhard Schröder, advocated for Russia as a viable energy partner.This study is significant for at least three reasons. First, the relationship between Germany and Russia has become hostile due to the war in Ukraine. Learning how Germany reacted to the previous souring in their relationship, such as Russian military operations in Georgia and Ukraine during the the 2000s and early 2010s, can establish explanations of how strained relationships evolve. Second, an analysis of a liberal-importer and authoritarian-exporter relationship, such as between Germany and Russia, can offer lessons to similar cases such as the United States and Saudi Arabia. Finally, conceptualizing how Germany and Russia were able to cooperate for so long, despite the complex and oftentimes tense political relations they had, is a useful guide toward interpreting economic cooperation between countries with competing geopolitical objectives.

Goodman, Alina

Institution: *KY - University of Kentucky*

Discipline: Public Health

Author/Contributors:
Alina Goodman *Kendra OoNorasak*

Abstract Name: **A Community Partnership to Upcycle Textiles into Reusable Bags to Deliver Meals Prepared from Recovered Foods**

Background: The increase in fast fashion has decreased the lifespan of textiles, resulting in an increased amount of textile waste. In the US alone, only 13.6% of clothing is recycled. Additionally, 1 in8 people in Kentucky struggles with food insecurity while 40% of food is wasted. Based on a previous collaboration to address food waste and food insecurity, upcycled grocery bags could be a novel approach to simultaneously address textile waste and food insecurity.Purpose: 1) Evaluate the process of working with volunteers to create reusable grocery bags from upcycled textiles. 2) Evaluate the durability of reusable grocery bags to package and transport foods. 3) Evaluate the environmental impact of creating and using reusable bags.Methods: Volunteers from UK Cooperative Extension master-sewing quilt guilds were invited to use scrap materials to create two patterns and complete a 28-item survey about their experience. Students from a student-led recovery and meal delivery operation will package and deliver prepared meals using reusable bags to low-income seniors and will complete a survey. The environmental impact will be measured through the amount of fabric diverted from the landfill.Results: To date, 45 volunteers have completed surveys. The survey response rate was 60%. Preliminary findings suggest that volunteers were eager to participate, implying the acceptability to continue or expand this project. Preliminary analysis shows 5,169.25 g of textile waste has been redirected from landfills to be made into these bags. Currently, 10 student volunteers are testing the durability and acceptability of the bags and will complete surveys about their experience.Conclusions Initial findings suggest that this pilot project is feasible and effective due to a decrease in textile waste, volunteers' desires to continue making similar bags, and student volunteers' optimistic opinions on reusable bags being easier and more convenient to pack than paper bags.

Gordon, Mathew

Institution: *GA - Georgia College and State University*

Discipline: Biology

Author/Contributors:
Mathew Gordon

Abstract Name: **How do painted nest boxes affect Eastern Bluebird nest temperature?**

The rise of global temperatures as a result of climate change has created the need for new practices to ensure the survival of many species. For birds, temperature is a primary factor in nest site selection and a driver of success, so successful management will require temperature mitigation techniques. Cavity nesting birds such as the Eastern Bluebird are particularly vulnerable because natural cavities and nest boxes can experience temperatures higher than the outside ambient temperature. If the interior temperature reaches 41oC, this can be lethal to eggs and nestlings. Additionally, temperature can drastically affect nesting bird physiology and behavior, which can also negatively impact nest success. The goal of this study is to determine if painting nest boxes white can reduce the interior temperatures. We monitored 50 Eastern Bluebird nest boxes, 25 were painted white and 25 were left unpainted, at Panola Mountain State Park in central Georgia. Each nest box contained two temperature data loggers, one inside and one on the underside, and recorded temperatures every hour from June 4th to August 15th, 2022. Throughout the whole season, the daily high temperature in control boxes remained approximately 2oC warmer than outside while the daily high temperature in painted boxes remained approximately 2oC cooler than the outside. Painting the boxes not only provides better conditions for nesting bluebirds, but provides a cooler environment than ambient temperature. Especially in hot climates such as central Georgia, cooling nest boxes will become increasingly important as global temperatures rise. Painting nest boxes colors that reflect solar rays may inform habitat management for this and other cavity-nesting species.

Gormsen, Luke

Institution: *TN - Middle Tennessee State University*

Discipline: Physics/Astronomy

Author/Contributors:
Luke Gormsen,
Ariel Nicastro

Abstract Name: **Electrical ring resonator: Experiments and program development**

Since the large-scale commercialization of fiber optics in the 1970s, there has been an explosion in research to find ways to optimize and further its applicability. Primarily applied in the field of optics, ring resonators have been found to haveincreasing potential in such areas as photonic switching, signal filters, and optical sensing. Similar in its applicability, electrical ring resonator can be created to serve a variety of functions. In this research, electrical filters made from ring resonators were created both experimentally and computationally. The filter was built in a physics laboratory byusing co-axial cables connected in various configurations with different numbers of cable rings join to a straight signal cable path. The filter properties were measured by an impulse method using a frequency generator and an oscilloscope. The extracted data from the oscilloscope are analyzed computationally to determine the characteristics of frequency transmission for each configuration.Additionally, the computational model developed allows us totest various configurations of ring resonator structures by employing the transfer matrix method. This allows us to compare the experimental values with expected computational values and enable future researchers to test increasingly complex resonator structures that are too difficult to create in the lab.

Gosha, Myles

Institution: *GA - Morehouse College*

Discipline: **Biology**

Author/Contributors:
Myles Gosha,
Kathleen Bostick,
Ethell Vereen

Abstract Name: **An Intersectional Analysis on Water Quality and Socioeconomic Status in America: A Scoping Review**

In the 1930's the federal government began redlining real estate, marking "risky" neighborhoods for federal mortgage loans on the basis of race and environmental factors. Many historically redlined communities and low socioeconomic status households currently experience significant disparities as a result of America's biased and racially motivated capitalistic system. Disparities such as water quality below that of the general population is a scope of investigation that is often neglected. Additionally, there is a lack of resources, studies, and data available that describes the connection between socioeconomic factors and water quality. A scoping review was designed to identify peer-reviewed literature that examined challenges related to water quality in the context of socioeconomic factors. The study was undertaken to identify the extent of the literature, summarize current reports, and identify research gaps and needs. Since scoping reviews are hypothesis-generating rather than hypothesis-testing, this review serves as a critical stepping stone for further research. Key search terms were developed and mapped on three bibliographic databases, Science Direct, National Center for Biotechnology Information (NCBI), and ProQuest. Review selection and characterization were performed by two independent reviewers and a senior reviewer. A total of 1,848 references were imported into CovidenceTM for screening published from 2012 to 2022. Of these, 26 studies were included in the final analysis. Preliminary results of this investigation show that research investigating the effect of socioeconomic factors on water quality is limited. There is an immediate need for more research funding, research initiative, and inquiry to inform policy decisions for improvements of water quality and health-related outcomes in low socioeconomic communities.

Gosian, Megan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Education**

Author/Contributors:
Megan Gosian

Abstract Name: **Considerations for Implementing Equity, Diversity, and Inclusivity Practices into an Elementary Classroom**

Recently there has been more literature regarding introducing equity, diversity, and inclusivity into elementary schools. In my project, I examine possible ways to implement these equitable practices as an aspiring elementary and special education teacher. I draw on my experiences and research to provide plenty of examples such as lesson plans and prompting questions. My project consists of three categories; Identities, Environment, and Content. In the first category, I ask guiding questions on how to support students in many different demographics including race, gender, socio-economic status, and more. For the environment, I question the inclusivity of culture in classroom decorations and the usability of the furniture layout. Lastly for content I inquire on topic delivery for students with disabilities and assignments for students who may not have a home life that allows for homework completion. Additionally, I created a discussion framework to assist with having difficult conversations. It follows a mnemonic that encourages critical thinking and taking action.The goal of this project is for this informationto be used by teachers as a short and simple document that can guide their addition of more equitable practices in the classroom.

Goss, Jenna

Institution: ***IL - Trinity Christian College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Melissa Ballesteros *Jenna Goss* *Kara Van Dyke*

Abstract Name: Religious Counselors and Cultural Competence: When Beliefs Collide

Individuals with a fundamentalist religious orientation respond defensively to challenges against their religious beliefs(Abeyta; Blake, 2020). Individuals who are intrinsically religiously oriented are internally focused and help others based on their own values, whereas quest-oriented religious individuals are altruistic and act based on the values of those they help, (Batson 1976, Batson et al., 1989). Researchers aim to understand the relationship between orientations of religiosity and counselors' perceived multicultural competence with clients. In this exploratory mixed-methods study, 35 counseling students and alumni from a small midwestern religiously affiliated college completed a survey with open-ended questions and scales. The short answer questions ask about faith, experiences in clinical training, and counseling practice. Participants completed the 12 Item Quest Scale (Batson; Schoenrade, 1991), Revised Religious Orientation Scale (Gorsuch; McPherson, 1989), Multidimensional Cultural Humility Scale (Gonzalez et al., 2021), Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (Bidell, 2017), and Fundamentalism Scale (McFarland, 1989). Researchers discovered participants who score themselves as fundamentally oriented and see religion intrinsically, score highly in self-awareness. Participants who score highly in quest orientation score highly in competence to work with LGBTQ+ clients. The results were: significant positive correlations between intrinsic and fundamentalist (N=29, r= 0.646, 0.000), fundamentalist and self-awareness (N=29, r= 0.416, 0.25), quest and LGBT DOCSL (N=35, r= 0.384, 0.04), as well as significant negative correlations between fundamentalist and quest orientations (N=29, r= -0.595, 0.001). Qualitative responses indicated that counselors who wrestle with their religious beliefs are more willing to engage clients' values. Conversely, religiously certain counselors displayed more internal conflict and less confidence when helping clients with differing beliefs. These initial results support Abeyta and Blake's (2020) findings that those who are more fundamentalist and intrinsically oriented help others according to personal values.

Grabinski, Jacob

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Junior Tochimani,
Alyssa Bierman,
Jacob Grabinski,
Shalyin Jochum,
Aspen Mercer,
Jackson Turk

Abstract Name: Social Media and Self-esteem

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negative information that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development.The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Graf, Anne

Institution: *NC - North Carolina State University*

Discipline: **Physics/Astronomy**

Author/Contributors:
Anne Graf,
Laura Clarke,
Jason Bochinski,
Brent Boland

Abstract Name: **Building a Better Nanofiber Electrospinning Apparatus**

Electrospinning is a method used to create nanofibers, in which a voltage difference draws a solution or melt of a polymer into long, thin strands. With an appropriate apparatus, electrospinning could be used in rural areas without safe drinking water, to fabricate filters. I am developing that appropriate apparatus. The current basic setup involves a set of metal plates, with a voltage difference across them. The polymer fluid is drawn into “fingers”, or deformations of the surface, and then into cone-jets through which the polymer fluid exits at small diameters. Electrospinning is usually done with solutions rather than melts, but that is a slower process, with less potential for scaling up for industrial viability, and less adaptable for rural areas. Melt electrospinning is a promising alternative, but current attempts have involved blow-back issues, in which the nanofibers form a clump between the metal plates. In order to solve this blow-back issue, I have built a new prototype for the collector plate. By introducing a spinning collection device, the nanofibers adhere to the surface, and are pulled away from the area in which they could form a blow-back clump. That alone is sufficient for spinning solutions, but voltage must be applied to the collection device in order for it to be used with melts. There has been some success in testing this prototype, both with solution and melt electrospinning. The future development of this prototype could lead to a portable melt electrospinning device to be used in large- and small-scale operations.

Graham, Abbey

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Sociology**

Author/Contributors:
Abbey Graham

Abstract Name: **How Do Animals Affect the Mental Health of College Students?**

Humans and animals often have a unique bond - animals can be a source of comfort and companionship, help us to perform the tasks we need to, and help us heal from difficult times in our lives. There has been research conducted about how the human-animal bond can influence both physical and mental health, but not many decisive conclusions have been drawn as to whether animals can directly influence our mental health for the better. This paper discusses findings of a study conducted at the University of Wisconsin-Stout investigating the influence of animals on mental health through a survey and follow-up interviews. A survey was sent to a random sample of 1,000 students who were asked questions about their previous experiences with animals, how those experiences influenced their mental health, and about their current mental health. At the end of the survey the students were given the opportunity to opt into an interview to discuss the topic of animals and mental health in further detail. Eight interviews were conducted wherein the researcher found overall positive experiences with animals, especially with pets. Although I did not find a significant impact on mental health, I did find that animal relationships play an important positive part in the lives of many college students. Given these findings, I recommend that college campuses consider hosting events featuring animals (such as de-stress puppy meet-ups) in order to help students deal with negative emotions and with the loneliness that college can cause. Providing animal-assisted therapy could also play a role in helping students and could be considered.

Graham, Ava

Institution: *MT - Montana State University - Bozeman*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Joseph Triem,
Ava Graham,
Trevor Zahl,
Royce Wilkinson,
Blake Wiedenheft

Abstract Name: **Screening Type III CRISPR Complexes for Enhanced Signal Amplification**

Type-III CRISPR-Cas systems are programable RNA-guided detection systems that recognize RNA targets by complementary base pairing. Target RNA recognition activates a polymerase domain that selectively polymerizes adenosine triphosphate (ATP) into cyclic oligomers of adenosine (cOA). In bacteria, target detection-dependent polymerization of ATP amplifies the cOA alarm signal during an infection, and we recently repurposed these systems for sequence-specific detection of SARS-CoV-2. However, the sensitivity of these new CRISPR-based diagnostics is still insufficient for clinical applications. To improve sensitivity, we are screening type III complexes from Thermus thermophilus, Streptococcus thermophilus, and Enterococcus italicus to determine the rate of cOA synthesis (kcat). Complexes that synthesize cOAs more rapidly will be incorporated into the diagnostic to increase overall sensitivity.

Graham, Quill

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Quill Graham

Abstract Name: **Animals and Autism in Middle-Grade Literature**

Middle-grade literature about nonhuman animals, children, and autists reveals how those three categories—which are associated with “inferior” mental and linguistic capacities—blend together in the cultural imagination. These stories form such a large and relatively monolithic body of work that they constitute their own “autism/animal” subgenre, which has yet to be examined by humanities scholars. The genre’s patterns of representation reflect how and why people envision autists as mentally and spiritually closer to nonhuman animals, a conception that has popularized animal therapy programs for autists and has justified the maltreatment of those on the spectrum. Stories in the autism/animal genre often act out translation fantasies that allow characters to overcome the frustrating communication barriers between autists and neurotypicals as well as between humans and animals. These translation fantasies, although responding to a natural desire to connect with others, can place unfair burdens on autists and animals and can engender unrealistic expectations about communicating with those of a different neurotype or species other than one’s own.

Grammer, Benjamin

Institution: *AL - University of Alabama at Birmingham*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Benjamin Grammer

Abstract Name: **Gender Diverse Identity in Brazil: Resilience in an Epidemic of Violence**

Although the Brazilian LGBTQ+ community commands great influence in the nation's art and entertainment industry, more trans people are murdered each year in Brazil than in any other country in the world. While this is certainly an alarming statistic and an issue that deserves more attention than it currently receives, there is so much more to trans and travesti life in Brazil than death and violence. Therefore, it is the aim of this paper to reframe the idea that being trans equates death and emphasize the resilience, solidarity, and success of the Brazilian trans and travesti communities. However, it must first be acknowledged that anti-queer violence occurs at alarming rates in Brazil, and Black transfeminine people are especially targeted due to the confluence of racism and transphobia. Additionally, the recent anti-queer rhetoric and policy from the federal government has only perpetuated this violence. Despite these seemingly insurmountable barriers, though, thetravesti community, many of whom are sex workers, has managed to build networks of solidarity to promote mutual support, access to healthcare, and respectful recognition. Furthermore, many trans and travesti Brazilians have achieved national and international fame and have used their platforms to bring awareness to issues affecting their communities. Trans people have broken barriers in telenovelas watched by millions of people, graced magazine covers, and ruptured (trans)gender norms. Even though it is incredibly important to fight for an end to the violence against the queer community, it is imperative to highlight the incredible achievements of the Brazilian trans and travesti community to promote resilience and inspire hope in future generations of queer people.

Grandhi, Nishan

Institution: *MA - Worcester Polytechnic Institute*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Foote,
Gabriel Brown,
Nishan Grandhi,
William Michels

Abstract Name: **Assessing Lupine as an Environmental Conservation Tool in Iceland**

Iceland's environment is highly prone to erosion and has conditions that make plant growth challenging. The plant lupine is a divisive solution to soil erosion and reforestation that has been found successful in some regions of Iceland but not all. We researched the issue through extensive document research, expert interviews from different perspectives, and surveys of native Icelanders, to get as complete and unbiased a picture of the issue as possible. We used this to create a decision guide that gives a comprehensive account any person in Iceland can use in order to choose what they would like to do to address soil conservation and reforestation issues on their land. Key issues the decision guide covers are soil conservation, reforestation, and removal of lupine. Along with the decision guide, we include a decisional balance sheet to show the pros and cons of lupine usage in Iceland and a plant infographic to teach about the plants in the decision guide. These tools can be used by land owners in Iceland to make decisions about restoration and reforestation on their land.

Gransberg, Clayton

Institution: ***TX - San Jacinto College***

Discipline: Chemistry/Materials Science

Author/Contributors:
Clayton Gransberg

Abstract Name: Interstellar Travel: Reaching Alpha Centauri

Will mankind ever venture to the stars and become an interstellar space-faring civilization, like is often imagined in popular science fiction? With the recent deployment of the James Webb Space Telescope astronomers can now see farther and deeper into space than ever before. There can be seen vast countless galaxies, each containing millions of stars, and each star likely containing many of its own planets. The number of exoplanets in the universe must be beyond what can be fathomed in the human mind; it may even be infinite. Can we reach out to explore this endless universe or can we only gaze in wonder? The purpose of this project is to research both theoretical and cutting-edge space exploration technologies that may bridge the gap between the earth and interstellar space and to provide a brief compendium to compare these concepts side by side. To understand both the limits and potential of interstellar travel this study will reference theories, research, and development from organizations such as NASA and SpaceX, as well as the writings and research of prominent physicists, astronauts and aerospace engineers.

Grant, Marcus

Institution: ***CT - Eastern Connecticut State University***

Discipline: English/Linguistics

Author/Contributors:
Marcus Grant

Abstract Name: From the New Mother to the Other Mother: An Intersectional Look at Age and Class in Neil Gaimanðs Coraline and Lucy Cliffordðs ðThe New Motherð

Discussion surrounding Neil Gaiman's novella, Coraline (2002), has foregrounded psychoanalytic and feminist theories, centering on the gendered antagonism presented as the titular character fights and defeats her supernatural "other mother." Scholars have often overlooked an underlying issue that Coraline faces: her family's lower-class status. My argument illuminates the heavy impact that classism has on the family dynamic within the novella, specifically the significance of working from home, which both of her parents do. Drawing upon social science research preceding and contemporary to Coraline's publication, I demonstrate how the text fits into the cultural zeitgeist around the "work from home" dynamic as it developed at the turn of the twenty-first century, especially the challenge it presents to the historical separation of "work" and "home." In doing so, I posit the acceptance of class hierarchy as the border that the story places between childish immaturity and readiness for adulthood. In addition to the novella, I examine one of its source texts, Lucy Clifford's "The New Mother" (1882), to facilitate historical comparisons of parent-child relationship dynamics as well as the relationship between "work" and "home" in the Victorian period, when the two were first teased apart, and the contemporary moment, when the two are once again blurring. As many Americans have found themselves having to work from home during the pandemic, discussion surrounding the experience of work and home in Coraline and "The New Mother" are more relevant than ever.

Gray, Autumn

Institution: ***VA - George Mason University***

Discipline: Biology

Author/Contributors:
Autumn Gray,
Jose Brito,
Cody Edwards,
Henrique Figueiro,
Klaus-Peter Koepfli

Abstract Name: First complete mitochondrial genome of the Saharan striped polecat (Ictonyx libycus)

The Saharan striped polecat (Ictonyx libycus) is endemic to Africa, inhabiting the edges of the Saharan Desert. Little is known about the biology or genetic status of this member of the weasel family (Mustelidae). We present the first complete mitochondrial genome of the Saharan striped polecat, assembled from data generated using a genome skimming approach. The assembled mitogenome is 16,549 bps in length and consists of 37 genes including 13 protein-coding genes, 2 rRNAs, 22 tRNAs, an origin of replication, and a control region. Phylogenetic analysis confirmed the placement of the Saharan striped polecat within the subfamily Ictonychinae.

Gray, Jonah

Institution: ***IA - Iowa State University***

Discipline: Sociology

Author/Contributors:
Colton Poor *Jonah Gray* *Jeanetta Plotzke*
Jennifer Seth

Abstract Name: Student Perspectives on Sustainability at Iowa State University

Today's university students will face unprecedented environmental, economic, and societal sustainability challenges upon graduation. The Sustainability in Curriculum Change Project (SiC-CHANGE) employed focus groups and a student body survey to understand Iowa State University (ISU) students' perspectives on how well the curriculum and extracurricular activities are preparing them to address the various sustainability challenges that society faces. Although ISU has incorporated sustainability language into its strategic plans and actions over the years, we are not aware of any systematic efforts to assess the adequacy of the university's efforts to increase student knowledge and skills related to sustainability. This research project is a rigorous effort to learn from students about their interest in and their experiences with sustainability at ISU. Twenty-one students from select colleges participated in focus group discussions between October 2021 and December 2021, and 1,206 students responded to a web-based survey of juniors and seniors conducted between April 18 and May 16, 2022. Our sample represents all colleges offering undergraduate degree programs at Iowa State University. Most respondents placed high importance on addressing environmental, economic, and social sustainability outcomes articulated in the UN sustainable development goals. Students at Iowa State feel empowered to solve climate change issues in the future, but they want more courses that integrate sustainability into their curriculum. Additionally, students believe that public universities should be leaders in sustainability. Our results show that most students don't think Iowa State prioritizes sustainability in education or that they are leaders in sustainability. Survey and focus group participants suggested many ways that ISU could incorporate this topic into the ISU experience to better prepare students with the knowledge and skills needed to face present and future sustainability challenges.

Gray, Sylvie

Institution: *AL - University of South Alabama*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Sylvie Gray *Miranda Traylor* *Amanda Cuomo*
Joshua Keller

Abstract Name: **Sex and Cuff Pressure Specific Hemodynamic Responses to Blood Flow Restriction Leg Extensions**

Background. Resistance training with blood flow restriction (RT+BFR) is a popular exercise prescription in populations including athletic and older individuals. However, there is limited data on the influence of cuff pressure on the exercise pressor reflex (EPR) and resulting blood pressure (BP) increase, especially in women. Therefore, our purpose was to investigate the cuff pressure- and sex-specific hemodynamic responses to RT+BFR.Methods. 33 young (24 ± 6 yrs) adults (16 male, 17 female) completed 2 randomized visits. The participants completed the exercise with 40% of the minimum pressure to occlude each femoral artery (AOP), whereas the other day participants exercised with 60% AOP. The exercise consisted of 4 sets (1x30, 3x15) of bilateral leg extension with 30% of their one-repetition maximum (1RM). Following each set, heart rate (HR) was recorded, whereas BP was recorded after the last set. Two, mixed-factorial ANOVAs (Sex×Cuff Pressure) were performed to examine mean differences in percent change of mean arterial pressure (MAP) and HR.Results. The ANOVA for MAP indicated that there was no Sex × Cuff Pressure interaction (p=0.480) or main effect for Sex (p=0.481).There was a main effect for Cuff Pressure (p=0.028). The 60% AOP provoked a greater increase than 40% AOP (23.2 ± 11.5% vs. 17.4 ± 10.9; Δ=5.8%, CI95%= 6.5 – 11.0). For HR, there was no significant (p>0.05) interaction or main effects, but every value was positive suggesting (as expected) HR increased indiscriminately during exercise.Conclusions. Our results indicated that a bout of RT+BFR likely elicited an augmented EPR such that the typically observed sex difference in increase of MAP was eliminated. Thus, prescribing BFR based ons ex is likely not needed. For special clinical populations, our results suggest using 40% AOP to mitigate changes in MAP

Graziano, Adam

Institution: *NY - SUNY Brockport*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Adam Graziano,
Kathryn Amatangelo

Abstract Name: **Mapping the Presence of Invasive Plants in a Temperate Forest Fragment.**

Biological invasions are a prominent contributor to the loss of biodiversity around the world. Introduced plants are common in fragmented forests, especially those used for recreation. My research sought to map the presence of invasive plants in the SUNY Brockport campus woodlot and relate the abundance to areas disturbed by the emerald ash borer (Agrilus planipennis). I hypothesized that there would be more invasive species along the forest's edge and in the areas disturbed by the emerald ash borer, where there is less canopy. I walked twenty transects through the entire site and established 318 15x15m plots along the forest's edge and within its interior. In each plot, I measured invasive species abundance using an ordinal scale, canopy cover using hemispherical photography, the total number and identity of all living and dead trees and recorded the GPS location. I used ArcGIS to create maps of the data to visualize trends between edge and interior and to identify high priority species. I performed t-tests to compare my results between the edge and interior and Spearman's rank to find associations between variables. My results did support my hypothesis, as invasive plants are most abundant on the edge and in the areas where ash was recently lost. I also found that one species in particular, Rosa multiflora, was indicative of higher invasive species richness. The emerald ash borer is widespread across the nation, so it is imperative that we understand its consequences and inform land managers of areas that are susceptible to plant invasion.

Greeley, Christopher

Institution: *MA - Bridgewater State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Christopher Greeley *Pablo Bedoya – Ríos* *Samuel Bechtold*
Samuel Serna Otalvaro

Abstract Name: **Simulations in Non - Linear Optics for Quantum Applications**

Light and light-enabled technologies have been revolutionizing our world for the previous decades. A very particular type of light source is a laser, which excites atoms in a controlled manner emitting and amplifying lightin structures that confine light and enhance the light-matter interaction, called cavities. Lasers and photonicsare ubiquitous in telecommunications, cryptography, and sensing. Forty years ago, several groups around the world demonstrated experimentally a novel property in lightcalled: quantum entanglement. These experiments were awarded the 2022 Nobel Prize in Physics. The experimental generation, manipulation and detection of entangled light particles (photons)started a new wave of devices called the second quantum revolution. Quantum engineering companies already represent millions of dollars in many countries' economies such as the USA, France, UK, Japan, China and Germany, just to mention a few. In particular, the promises of secure communications and computing given by quantum entanglement are unparalleled. Most of those products are in free space or fibers and some explorations have been done on-chip. The ability to reliably fabricate and control on-chip entangled photon sources with desired characteristics are a key missing element to fully take advantage of quantum engineered technologies, as it will open the possibility of adding these quantum sources and detectors to technologies across the spectrum, even to cellphones. At present it is uncommon to use simulations to predict all characteristics of entangled photon sources. Conventionally, only dispersion engineering is done when designing photonic devices for this purpose and non-linear propagation is ignored. In this work, we present a full set of simulations using Frequency Domain Time Difference (FDTD) and Fourier Split-Step (FSS) methods to perform dispersion engineering and simulate the non-linear propagation of the optical field in a Photonic Integrated Circuit (PIC) in order to predict all the characteristics of an entangled photon source.

Green, Dennis

Institution: *OK - Southern Nazarene University*

Discipline: **Biology**

Author/Contributors:
Dennis Green,
Caio França

Abstract Name: **West Nile Virus Surveillance and Forecast in Oklahoma**

West Nile Virus (WNV) is a seasonal mosquito-borne disease characterized by a febrile illness and has the potential to result in a rare neuroinvasive disease. This disease propagates in an enzootic cycle between mosquitoes and birds. WNV is then transmitted to humans by an infected Culex mosquito. In Oklahoma, WNV is an epidemic disease characterized by three major outbreaks: 2003, 2007, and 2012. Environmental factors, such as bird migration,influence WNV, which can result in unpredictable aspects of the disease's transmission. Additionally, limited surveillance creates a need for an accurate, early-warning system that can inform public health practices and prevent disease outbreaks. In this study, we focused on validating the Arbovirus Monitoring and Prediction (ArboMAP). ArboMAP uses a generalized additive model that combines environmental data with mosquito WNV surveillance data to produce weekly, county-level forecasts of human WNV cases. ArboMAP uses a generalized additive model that combines environmental data with mosquito WNV surveillance data to produce weekly, county-level forecasts of human WNV cases. The outputs are relative and absolute risk maps, a yearly forecast, a case estimation of positive county weeks, and a multi-year forecast of 2002-2022. ArboMAP has a 91 percent forecast accuracy calculated using Area Under the Curve (AUC) calculations. Due to its accuracy, ArboMap has the potential to benefit local public health applications by providing information on when and where WNV outbreaks may occur.

Greene, Claire

Institution: *AR - Arkansas State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Claire Greene *R. Shea Harris* *Sean O'Keefe*
Maureen Dolan

Abstract Name: **Developing a streamlined bioassay to verify polyethylene breakdown to ethylene glycol by Galleria mellonella larvae**

As plastic use increases on Earth, disposal of plastic waste is an immediate and growing environmental challenge. Likewise, this challenge extends to long-term space travel and remains a concern with our expanding presence in space. A potential plastic waste management solution is the larvae of Galleria mellonella (waxworms), a common beehive pest. These organisms have a unique intestinal microbiome capable of biodegrading low-density polyethylene (LDPE) film (e.g. sandwich or grocery store bags) into a reusable product, ethylene glycol (EG). The natural food source of the waxworm, the waxcomb of beehives, is hypothesized to facilitate the breakdown of long hydrocarbon chains found in polyethylene plastics. In this project, 32 waxworm larvae were sent to the International Space Station (ISS) for 33 days in July of 2022 with support from the NASA SPOCS (Student Payload Opportunity with Citizen Science) Program. To verify these waxworm larvae biodegraded plastic in microgravity, a robust assay is needed to detect the presence of the endpoint LDPE breakdown product, ethylene glycol, contained within their excreta (frass). To confirm the chemical breakdown of LDPE in earth control and ISS-treated larvae, a previously developed enzymatic bioassay for detecting EG in animal serum was modified to detect the compound in frass. To validate the accuracy of this modified enzyme-based assay, collaborators at Virginia Tech University (VT) have developed a GC-MS detection method, a technique frequently used in the literature to identify chemical intermediates and breakdown products from LDPE biodegradation. Results across the two methods will reveal how the microgravity environment impacts the G. mellonella larval ability to biodegrade LDPE. Development and validation of this enzyme-based EG assay will provide a new high throughput (HTP), more facile method for detecting EG in more complex, non-serum samples.

Greengard, Mia

Institution: *MN - University of St. Thomas, Minnesota*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Mia Greengard

Abstract Name: **Peptone Variation in Plant-Based Media Formulations for Increased Protein Production in Escherichia coli**

The basis of this project focuses on ideology of producing a sustainable “food source” to supply the cells that make the medicine. Microorganisms, such asEscherichia coli, often have a negative connotation for causing disease, yet the majority of microorganisms are the main producers of pharmaceuticals. Understanding the metabolism and energetic use of microorganisms can guide the supply of nutrients in the culture media that are essential to a cell. Traditionally, cell culture media is made with animal-based products producing a large carbon emission. A more sustainable option to decrease the carbon footprint is plant-based media formulations, specifically pea and soy peptones.To evaluate the plant-based peptones success on bacteria growth and production of a protein, this study will measure the production of Green Fluorescent Proteins (GFP) expressed in the bacterial strainE. coli. Variations of pea and soy peptones will be used in the culture media to test the cell growth and protein production. The specific media contents will be analyzed before and after each trial for comparison. This will show which nutrients were unused and which were under supplied. If the cells are provided with an ample amount of its necessary nutrients, this should produce a higher yield of protein. Optimizing the sustainable media options to compete with the animal-based media would help reduce the environmental impact of research and pharmaceutical industries using animal-based medias, while still generating the desired product. This is important as E. coli is used to produce a variety of medicines. Insulin is an example of important product ofE. colias it supplies millions of people a year who suffer from diabetes.Providing a media that has specific nutrients for E. coli will be useful for producing these medicines.

Gregg, Melissa

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hunter Dutkiewicz,
Melissa Gregg,
Alex Behnke

Abstract Name: **An EEG Investigation of the Discrepancy Between Auditory and Visual Memory**

Previous research has indicated that visual recognition memory has a much larger capacity than auditory recognition memory. The purpose of this study was to investigate the disparity between the two memory systems by examining the neural circuitry involved in accurate recognition of visual and auditory stimuli, to examine the size of the discrepancy between auditory and visual memory across the lifespan, and to measure the relationship between working memory ability and recognition memory. In Experiment 1, participants completed a recognition memory task while neural responses were recorded with a 32-channel Brain Vision EEG system. Participants received a study phase with pictures/sounds, followed by an immediate recognition memory test. During the memory test, participants were presented with pictures/sounds that were old (presented during study), new (not presented during study), or exemplars that were variants of objects presented during the study phase. Participants were instructed to classify each picture/sound as “old” or “new” by pressing a corresponding key. In Experiment 2, participants ranging from 18 to 65 years of age completed a working memory assessment, followed by the recognition memory task from Experiment 1. The data analyses have the potential to indicate whether the discrepancy between visual and auditory memory is related to changes in gray matter density of the prefrontal cortex as we age. The results of this study will also improve our understanding of the connections between auditory memory, visual memory, and general cognitive ability and will allow a better understanding of the relationship between memory and general cognitive decline.

Gregory, Taylor

Institution: *NC - Western Carolina University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Taylor Gregory

Abstract Name: **The Use of Essential Oils in Increasing Potency of Insecticides on Mosquitoes**

Mosquito-borne illness is a worldwide problem, with over one million people dying from them every year. The current tools for controlling mosquito-borne diseases are insecticides. Unfortunately, the overuse of insecticides has caused increased insecticide resistance. Our research focuses on finding a chemical tool for better penetration of the insecticides into the mosquitoes and therefore allowing a decrease in insecticide use. The tool being used is essential oils, research in the literature shows that there is a correlation between essential oils being added to insecticide mixtures and their increased potency in mosquitoes. One potential mechanism for this improvement is that the essential oils assist the insecticide in diffusing through the exoskeleton of the mosquito. We have chosen to explore this mechanism by studying the changes in insecticide transport into a simulated mosquito exoskeleton (wax) as a function of various solvents using an infrared spectroscopic imaging system. Using this instrument, we measured infrared spectra as a function of the time of the wax before, during, and after adding a component from the essential oil with or without an insecticide (solution) to the edge of the wax. IR spectra of the solutions and their diffusion curves were collected to show the correlation between insecticides and essential oils. While new, this research has the potential to make current insecticides more potent and protect the ecosystem from over usage of insecticides.

Gremillion, Madison

Institution: *CO - University of Northern Colorado*

Discipline: **Nursing/Health Science**

Author/Contributors:
Madison Gremillion

Abstract Name: **End-of-Life Patient Communication: Exploring Comfort, Communication and Education of Healthcare Professionals for End-of-Life Care**

Historically, the medical field has viewed death and dying as incurable 'medical failures,' and as a result, many healthcare professionals have difficulties when facing a patient who is dying or at the end of their life (DeSpelder, 1983). These individuals will use avoidant behavior to avoid end-of-life (EOL) patients or can have difficulty providing essential aspects of care including communication, which contribute to building a strong relationship between the healthcare provider and patient. For the healthcare professional (HCP), this can stem from anxiety related to thoughts of death and a lack of educational support or experience. The researcher in the current study interviewed healthcare professionals within EOL care specialties such as hospice and palliative care as well as other specialties focusing on questions related to experiences, education, and comfort around EOL interactions. Participants include professionals in grief counseling, oncology, and palliative care. Phenomenological qualitative thematic analysis has been used to derive common themes from the interviews, integrated with available published research to identify why HCPs in general healthcare settings may feel under-prepared to have EOL discussions with dying patients compared to those in EOL care specialties. These themes include what experiences or educational supplementation has aided in the comfort and success in EOL communication and how US cultural perceptions of death affect healthcare perceptions of death. This research will provide a foundation of data for future research paths regarding the development of education and support for HCPs interacting with EOL patients.

Grevious, Jack

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication/Journalism**

Author/Contributors:
Connor Garland,
Dylan Baumbach,
Jack Grevious,
Emma Macken,
Jordan Witzel

Abstract Name: **The effects of Time Poverty on Stress and Life Satisfaction in university students and workforce participants**

In an increasingly connected world, where work and school are just a click away, work-life has integrated more and more into personal-life taking more of one's personal time. Advancements in telecommunication, telecommuting to work, has contributed to an 'always on' culture that values productivity and always being available. In light of this, there is limited research on perceived time poverty. This study examines perceived time poverty in conjunction with environmental demands and their effects on stress and life satisfaction in the context of university students and workforce participants. A survey using scales on time poverty, irritation, and environmental demands were used in a quantitative analysis to measure their effects on stress and life satisfaction.

Greymoore, Persephone

Institution: *OK - University of Central Oklahoma*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Persephone Greymoore

Abstract Name: **Rolling a Nat 20 in Identity: How Dungeons and Dragons is Used for Exploration and Representation by Queer Individuals**

Imagine you are a queer person in a society where you are told you are wrong, disgusting, and monstrous. You don't get to see people like you up on the big screens or in mainstream media. This can have disastrous consequences.Now imagine that as a queer person you find a community where you can be yourself without fear of the repercussions. For many people, that safe and welcoming environment has been found through Dungeons and Dragons (D&D).Since its debut in 1974, Dungeons and Dragons has quickly become the most popular role-playing game in the world. In total, a reported 50 million individuals played Dungeons and Dragons regularly.Dungeons and Dragons also is no longer a game meant for cishet men; with around 49% of players self-identified as queer. Creating characters and extensions of the individuals themselves outside of the societal norms of sex and gender, Dungeons and Dragons have opened itself up to those who's lives already fall outside of those boundaries in a day to day setting.Exploring one's identity is a vital part of growing up queer. With such nuances between gender roles, gender identities and sexualities, there's a lot to consider and account for when trying to find who you are. Having a place where the individual can freely and safely explore those complex thoughts and emotions can lead to that individual being more confident in their identity.Through IRB certified surveys and analysis of Dungeon and Dragon live plays, I have explored just how vital something such as a game is when it comes to the queer experience. When proper exploration and representation is given, queer people excel in their identities. It is often said that fantasy effects reality in profound ways and I believe that is true especially within the queer community.

Griep, Eric

Institution: *NC - Fayetteville State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Eric Griep,
Carley Brinkley,
Antwaun Tune

Abstract Name: **Photorealistic Environment Generation**

There have been recent efforts to advance the overall understanding of Mars. Information remains as important as it was when the rover named Pathfinder left the Earth. As it is difficult to achieve efficient human travel to Mars, the National Aeronautics and Space Administration (NASA) has continued to send these rovers to collect information about the red planet. Bringing data and results allows NASA to test hypotheses and develop scientific theories about Mars. Our goal is to generate a reliable synthetic environment similar to the Martian surface, using the Unity engine. Robots can be simulated in this environment with the Robot Operating System (ROS) and Unity bridge to resemble the process of recording and relaying information. Simulation in robotics is an integral part of the design process, most notably in space robotics where you often only get one chance for everything to work properly. Synthesizing the environment can help provide the quantitative data used to train machine learning models. This gives artificial intelligence the ability to complete tasks like object detection and vision-based navigation. The Unity engine allows for the seamless usage of realistic 3D objects from a wide variety of libraries and resources. This simulation will be able to generate geographic features like those found on Mars; the environment includes sand-like meshes, photorealistic rock walls, and rock patches. The collaboration between our team and other teams within the research program is feeding into a larger project. We're working forward to establishing a business that finds and authenticates data using trained AI robotics.

Groenewold, Olivia

Institution: *WI - St. Norbert College*

Discipline: Biology

Author/Contributors:
Olivia Groenewold,
Olivia Bruni,
Alfred Roca,
Adam Brandt

Abstract Name: **The Elephants of Guinea-Conakry: Nuclear and Mitochondrial Genetic Patterns**

Elephant populations in Africa are threatened by poaching and habitat destruction. The disappearing elephant range has caused small elephant populations to be isolated from others which may lead to a loss in genetic diversity due to inbreeding. Non-invasively collected fecal samples were obtained from elephants in Guinea-Conakry. DNA was isolated from these samples, and a portion of the mitochondrial DNA control region and three nuclear genes (PLP1, PHKA2, and BGN) were amplified by PCR and sequenced. Sequences were analyzed to determine mitochondrial haplotype diversity and species-diagnostic single nucleotide polymorphisms (SNPs). Data from this work will aid in conservation and anti-poaching efforts by contributing to a growing genetic database of African elephants.

Groh, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Lainey Walworth *Rhea Schaberg* *Abby Kroeger*
Lexi King *Hannah King* *Lydia Johnson*
Clara Dobratz *Taylor Bangert* *Grace Groh*
Kirsten Rossi

Abstract Name: **Designing a Space to Support Sensory Regulation Within the Eau Claire Children's Museum**

With the recent rebuild and renovation of the Eau Claire Children's Museum, the museum's executive team elicited the support of students and faculty within the Special Education and Inclusive Practices Department at the University of Wisconsin – Eau Claire to create a sensory room within the museum. The research team was comprised of student volunteers who previously took a class with Dr. Kirstin Rossi about play and sensory pedagogy, as part of the Unified Special Education program. The team began the development process by meeting with executives from the museum and touring the designated space. During the initial visit, the executive team discussed the goals of the museum. The main goal was to create a designated space for children to regulate themselves and re-enter the museum when ready. Previously, children who were dysregulated usually left the museum and ended their visit early. With these objectives in mind, student researchers used their learning from the aforementioned class and gathered further information on sensory integration to develop and design specific spaces in the sensory room. Within the design,all eight senses were supported through equipment, spacing, and materials. Additionally, a space was created toprovide a specific area for children to calm their bodies. The last project component was to identify materials and tools that would help children successfully reengage into the larger museumonce re-regulated. The sensory room was designed to be open to a variety of children while also providing tools and information for families to better understand their child's sensory needs, regardless of age or ability. Beyond the sensory room itself, informational materials were also created to share that increase community understanding of sensory needs and integration. This poster presentation will outline the research process and project development, including the final design and use of the space.

Grosse, Taylor

Institution: *MN - University of Minnesota - Duluth*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Taylor Grosse,
Ashley Thompson

Abstract Name: **Variations in Anticipated Stigma Reported by Men and Women Participating in a Mixed-Sex Threesome**

Sexual script theorists posit that people are socialized to believe that mixed-sex sexual behavior occurring between two (and only two) adults is the norm. In addition, women are expected to follow passive norms regarding their sexuality, particularly submitting to the more culturally accepted male sexual behaviors. Violation of these sexual norms often results in social sanction, or stigma. Thus, this study explored men's and women's anticipated stigma from friends, acquaintances, and society for their engagement in mixed-sex threesomes (MSTs; sexual activity involving three people at the same time in which persons of more than one sex are present). The results obtained from 364 adults who were asked to reflect on their most recent MST revealed that 50.0% of men and 36.9% of women engaged in a MST-O, whereas 50.0% of men and 63.1% of women engaged in a MST-S. Women and those engaging in an MST-S expected to be judged more harshly from all sources than did men and that those engaging in a MST-O. However, the effect of gender was not consistent across MST type, such that women only expected to be judged more harshly than men when engaging in a MST-O. Our results support research documenting the continued presence of a sexual double standard in western society, such that women anticipate being stigmatized to a greater extent than men. However, the gender discrepancy in anticipated stigma was only true for MST-Os, whereby participation in same-sex sexual behavior was believed to produce the most stigma regardless of one's gender.

Groszek, Abigail

Institution: *WI - Carthage College*

Discipline: **Biology**

Author/Contributors:
Alexis Menendez,
Abigail Groszek,
Angela Dassow

Abstract Name: **Passive Acoustic Monitoring of Cao-Vit Gibbons (Nomascus nasutus) Utilizing Multilaterations of Vocalizations**

Since their rediscovery in 2002, the cao-vit gibbon population has remained critically endangered and thus, a limited amount of information regarding their vocalization and general behaviors has been discovered. The use of Passive Acoustic Monitoring has been utilized as a non-invasive method to monitor individuals and wildlife populations alike. In this study, twenty GPS-synced audio recording units were deployed in a limestone karst rainforest in Northern Vietnam. The goal of the deployment was to determine the feasibility of finding precise locations of these individuals. Approximately 3,000 hours of audio data was collected and manually marked to locate times in which male or female calls were received at the units. The results of the multilateration analysis successfully generated a map showing the locations that different groups of cao-vit gibbons were calling. Future goals that have arisen from this research include gathering data for long-term research on gibbon communication, intraspecific behavioral interactions, as well as the potential development of technologically based solutions for applied conservation.

Grover, Ren

Institution: *SD - Black Hills State University*

Discipline: **Sociology**

Author/Contributors:
Kathryn Wheeler

Abstract Name: **When Stigma is Worse than Hunger: How Social Stigma Influences BHSU-RC Students - Use of the BHSU-RC Food Pantry**

Not only is food insecurity rampant among college students,but it contributes to an increased risk of suffering from adverse health impacts and barriers to accessing food and services even when food pantries exist on campuses. We are interested not only in checking out the demographics of who uses the food pantry but also reasons why they do/do not, especially when it comes to social stigma and the actual, physical, or emotional experience of the pantry. We apply a combination of sociological, statistical analysis, and social-psychological exploration of pantry users. Collectively utilize surveys to determine demographics, how many respondents do/do not use the pantry, and why, including how many college students experience social stigma or perceived stigma. Student researchers conduct interviews to flesh out these experiences of using the pantry, including why they choose to use it or not use it, how they experience actual or perceived stigma, and how we could arrange the physical situation of the pantry to minimize negative experiences. Influenced by Goffman's concepts of stigma and spatial sociology. Limited financial resources, the reduced purchasing power of federal aid, rising costs of tuition, food, and housing, and diminished social support resulting from prolonged emotional and physical separation from family and friends are some of the significant factors that have contributed to the issue of food insecurity among college students. These effects have generally jeopardized their regular eating patterns, thereby leading to food insecurities. The research question that this study aims to explore is: Is there a risk that food insecurity may negatively impact college students' health and well-being? What are the causes that have contributed to food insecurities among college students?

Grover, Sayan

Institution: *KS - University of Kansas*

Discipline: **International Studies**

Author/Contributors:
Sayan Grover

Abstract Name: **Achike Ri Kayewal? Evaluating the United States Healthcare System's Responsiveness to COVID-19 in Guatemalan Mayan Immigrants**

In recent decades, there has been a rapidly growing number of Guatemalan Mayan immigrant communities in the United States. This research project attempts to examine how prepared the US healthcare system is to provide quality care for COVID-19 outbreaks in Guatemalan Mayan immigrant communities. Previous literature has studied how immigration to the United States leads to health disparities for Indigenous immigrants from Latin America; however, most of this literature focuses on Yucatec Maya from Southern Mexico. Additionally, while scholars have studied some health disparities for Guatemalan Maya in the United States and within Guatemala, little research exists about the US healthcare system's preparation to provide quality COVID-19 care to these communities. This research will use a questionnaire to collect data from US healthcare workers regarding their perception of preparedness to treat COVID-19 in Guatemalan Mayan immigrant communities. This research will also analyze COVID-19 resources to evaluate whether the resources sufficiently target Mayan immigrants. I predict both methods of analyses will reveal a lack of adequate preparation in the US healthcare system for being able to treat COVID-19 in Guatemalan Mayan communities. This research will foster some visibility and discussions about adequate healthcare for a marginalized immigrant group often misidentified as Latino.

Grund, Annie

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Halley Weinberger *Annie Grund* *Ariana Jacobs*

Abstract Name: **Examining Resiliency and Mindfulness as Moderators of Stress in College Students**

Stress is a common experience for many individuals. From the recent COVID-19 pandemic to managing daily demands, situations that induce stress are common. Etherton et al. (2022) noted that college students, in particular, undergo an abundance of stressful experiences, such as rising tuition rates, high academic standards, money management, and concern for grades. According to Hudd et al. (2000), stress negatively impacts students, such that students under greater stress exhibited lower self-esteem, increased drinking, difficulty sleeping, lack of energy, and reductions in overall health. This can impact college students' ability to perform academically and meet various demands. As the number and intensity of stressors in college continue to increase, we chose to research the impact of stress on academic performance and well-being. Additionally, we explore how aspects of positive psychology (resilience, empathy, self-efficacy, mindfulness) may moderate stress in college students. According to Allan et al. (2014), resilience predicts academic performance, such that increased resilience is correlated with higher grades. Therefore, this study aims to investigate how resilience relates to perceived levels of stress in college students via a survey measuring behaviors related to their academic and everyday lives. We created a survey which was distributed electronically to college students, with a goal of obtaining at least 100 responses across different school levels and other demographic characteristics. We began data collection in fall semester 2022 (current N = 50) and will continue collecting data throughout winter and spring of 2023. We hypothesize that the college students who have higher levels of resilience, mindfulness, and empathy will also report lower stress and higher achievement in academics.The analysis will aid us in understanding the relationship between stress and resilience in current students at our university.

Grund, Zach

Institution: *GA - Kennesaw State University*

Discipline: **History**

Author/Contributors:
Zach Grund

Abstract Name: **Correlation between college tuition and military recruitment**

The cost of college tuition in this country is rising at a rate that will, in the near future, become unattainable. On average college tuition is about forty-eight thousand dollars for a four-year degree which is impossible for most families. College tuition started becoming harder to afford beginning in 1981, as the cost was rising much higher than previous years. At the same time what is also seen as a growth in military recruitment after a decline in recruitment, post-Vietnam. That decline was heavily motivated with a general distaste in military service as many Americans saw the Vietnam conflict as unnecessary. To build onto that, minimum wage starting in 1981 was not rising with inflation and wouldn't see a rise again until the 90's. Why this is all important is because it seems that this financial hardship is forcing many college and high school age individuals into the military. That ability to pay for it is being done using the GI bill which requires said person to serve four to six years. This is backed up with the use of the statistical data showing a growth in college tuition and the military recruitment numbers since the 1950's. Along with that, government policies such as No Child Left Behind that have policies that benefit military recruitment in schools and other educational institutions. With this all-in mind, it shows a trend that using costs of tuition to force people into the military. This trend seems to only be growing and will for the foreseeable future.

Grzybowski, Aloisius

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Huston Wilhite,
Aloisius Grzybowski,
David Larson,
Sam Scholze

Abstract Name: **Signal Recovery from Temporal Noise**

The Shannon-Whittaker Sampling Theorem guarantees that any band-limited signal with frequency band [−B, B] can be reconstructed using only its sampled values at times from an evenly spaced lattice. That is, the signal f is completely determined by its sampled values on the lattice, giving us a discrete (digital) representation of an analog signal. Human hearing is limited to frequencies within B = 20,000 Hz; therefore, band-limited signals are ubiquitous in signal processing. Temporal noise occurs when we sample at time values that differ from the intended lattice. We recently developed an algorithm that utilizes finite matrix computations to reconstruct a signal from temporal noise. In this talk, we will discuss this reconstruction and demonstrate several numerical applications. Moreover, we will present bounds to prove that the reconstruction procedure is stable under very mild assumptions.

Gschwandtner, Colton

Institution: *MI - Northern Michigan University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Colton Gschwandtner *Dr. Evan Pratt*

Abstract Name: **Interrogation of CB1 and CB2 Receptor Signaling in Living Mammalian Cells**

The medicinal properties of cannabinoids, have garnered elevated interest during the last two decades with increased legitimacy and research of Cannabis sativa. Most notably perhapsis the potential role of cannabinoids as anti-cancer agents. There is accumulating evidence suggesting that the anti-cancer properties of cannabinoids are attributed to reduced cell proliferation, increased cell death and dysregulation of the cell cycle. However, it is the process of autophagy that likely lies at the heart of the cannabinoid-induced effects on cancer cells. While it is clear that cannabinoids induce autophagy in cells, the molecular mechanisms that underlie cannabinoid-induced autophagy are not well understood. Cannabinoid receptors1 (CB1) and 2 (CB2) are the primary targets of cannabinoids at the cellular level. Stimulation of the CB1 or CB2 receptor leads to activation of two major cell signaling pathways. One signaling pathway involves the conversion of ATP into cyclic AMP (cAMP). The second signaling pathway involves phosphorylation of a protein kinase known as extracellular signal-regulated kinase 1/2 (ERK). A comparison was performed on CB1 and CB2 receptor-mediated cAMP and ERK signaling in MIN6 cells, which express both receptors. To study ERK phosphorylation, we treated MIN6 cells with the synthetic cannabinoid receptor agonist WIN 55,212-2 and performed immunoblotting. To interrogate the role of the CB1and CB2 receptors, cells were treated with the antagonists AM251 or AM630, respectively. Both receptors play an equivalent role in cannabinoid-induced ERK phosphorylation in MIN6 cells. Using a FRET-based cAMP biosensor, we measured cAMP dynamics in response to WIN 55,212-2 in the presence or absence of the antagonists. We found that activation of cannabinoid receptors elicited a decrease in cAMP levels, and this was dampened by inhibition of either receptor. Thus, both the CB1 and CB2 receptors are required for ERK and cAMP signaling in response to WIN 55,212-2.

Guardo, Dylan

Institution: ***TN - Trevecca Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Karleen Schmutz,
Dylan Guardo

Abstract Name: The Relationship Between Mindfulness, Directed Coping and Perceived Stress

With mental health becoming more recognized as a national problem, it is important to study the different aspects of how it affects lives and how it can be improved. Multiple studies have shown the positive effects of mindfulness to improve patients' stress levels through intervention. Studies have shown the preliminary effects of directed coping to also reduce perceived stress levels in people who are in consistently stressful environments. The current study sought to explore the relationship between mindfulness and directed coping skills among college students and their perceived stress levels. It was predicted that there will be a negative relationship between mindfulness scores and perceived stress levels; that there will be a negative relationship between directed coping scores and perceived stress levels, and that there will be a positive relationship between mindfulness and directed coping scores. Through a convenience sample, 183 college students were assessed through a voluntary survey. The survey consisted of the Perceived Stress Scale, the Directed Coping Scale, the Five Facet Mindfulness Questionnaire (Short Form), and a demographics section including age, academic level, and gender items. The results found a significant moderate negative correlation between perceived stress levels and mindfulness scores, a significant low negative correlation between perceived stress and directed coping scores, and a significant low positive correlation between mindfulness scores and directed coping scores. All hypotheses were supported. Recommendations for future research include replicating the research to include a wider range of cultural perspectives and differences in age.

Guarino*, Tori

Institution: ***FL - Florida Gulf Coast University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tori Guarino *S. Carter Oleckna*

Abstract Name: Retention Pond Recovery Practices and their Effects on Water Quality and Littoral Vegetation

There are more than 8,000 retention ponds in Lee County, which are critical for pollution reduction and flood prevention. Many of these retention ponds, however, do not fulfill their intended purpose of preventing flooding and reducing pollution; rather they suffer from an imbalance in the nutrient levels and vegetation die offs. A variety of littoral and aquatic plant life plays an important role in improving the pond's health by acting as a filter to sequester nutrients which aids in reducing pond pollution. By comparing the water quality and plant biodiversity of differing retention ponds, the effectiveness of various pond management strategies can be evaluated. In this study, three different Lee County retention ponds with various management practices and implementations were compared. The pond labeled FGCU Library Pondserved as the control because it is specifically designed to mimic natural conditions and resembles a wetland with lower nutrient levels and higher plant biodiversity. The ponds labeled Fairwinds and Southland are in different stages of restoration. Since November 2021,Fairwindshas had a "no-mow" zone, eliminated pesticide and copper dye applications, and has removed an invasive plant species. Until May 2022 when the community implemented the same recovery program as Fairwinds, Southland mowed the littoral zone and used pesticides and copper dye which killed all vegetation.Water quality samples and data analysis evaluating the impact of the restoration strategies have shown significant lowering of nutrient levels after the change in management practices. As of May 2022, theFairwindspond showed similar nutrient levels as theFGCU Library Pondwhile thenutrient levels of theSouthlandpond are steadily decreasing. Our next phase of research—the continuation ofplant composition surveys—looks to determine the impact of lower nutrient levels on plant biodiversity.

Guerra, Chloe

Institution: *IL - Northeastern Illinois University*

Discipline: Music

Author/Contributors:
Chloe Guerra,
Christopher Owen

Abstract Name: **A Teacher Resource Guide to Latinx Composers and Contexts incorporating Comprehensive Musicianship through Performance Unit Plans and Culturally Relevant Pedagogy**

Culturally relevant pedagogy echoes the significance of cultivating a sense of community through student centered strategies, putting cultural identity and diversity at the forefront of their education, and the philosophy that each student is successful in their own right. This research investigates the significance of Culturally Relevant Pedagogy as it pertains to Latinx students and how to justify the academic need for Culturally Relevant music curriculum to education administrators. The purpose of this study is to generate a resource guide focusing on choral pieces within a Latinx context that highlight systems of oppression within the Latinx community. The following pieces were analyzed for this teacher resource guide: “No, Nos Moveran” found in the Social Justice Choir Songbook, “De Colores” arranged by Franscico J. Nuñez, “El Pueblo Unido” by Sergio Ortega and arranged by Gene Glickman, and “Ayudame” by Carlos Cordero. These four pieces have been analyzed through a sociohistorical, musical, and pedagogical lens using the Shaping Sound Musicians (O’Toole) Comprehensive Musicianship Project (CMP) Unit Plans. The pieces were assigned a difficulty level based on the rubric provided by the text, Teaching Music through Performance in Choir: Volume 1 (Buchanan et.al). These pieces were chosen because they serve as a vehicle for culturally relevant pedagogy, provide narrative insight to the inequities experienced in Latin America, culturally validate the Latinx experience, and will create conversations of social justice within the music classroom.This resource guide for educators aims to address and emphasize the Latinx experience through a lens of social justice that will build musicianship through critical thinking of culturally relevant repertoire.

Guerrero, Amy

Institution: *TN - Christian Brothers University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Laura Billings,
Paola Campos Luis,
Amy Guerrero,
Edgar Villarreal,
Erlin Rodriguez

Abstract Name: **Neural and Behavioral Correlates of Sensation Seeking**

We sought to clarify both behavioral and neural characteristics of sensation seeking. In particular, we were interested in two components of event-related brain potentials (ERPs) elicited during a response inhibition task: the P3a, which is elicited by novel, unexpected, stimuli, and the P3b, which is elicited by targets. Participants completed self-report questionnaires to measure their sensation seeking. During the task, participants were presented with three types of visual stimuli in randomized order at a rate of approximately one every 1.25 s. The stimuli were (1) non-targets, to which they should make a response, (2) targets, to which they should withhold a response, and (3) novel stimuli, to which they should withhold a response. The targets and non-targets were relatively benign,but required sustained attention to tell them apart. The novel stimuli were photographs depicting arousing situations (e.g., skydiving).Based on previous research, we predicted that (1) the P3a would be positively correlated with sensation seeking, (2) the P3b would be negatively correlated with sensation seeking, and (3) response accuracy to novel stimuli would be inversely correlated with sensation seeking. P3a and total sensation seeking were positively correlated, but the relationship was small and not statistically significant. In contrast to our prediction, P3b was moderately positively correlated with total sensation seeking. Finally, response accuracy was not correlated with total sensation seeking. Although none of our hypotheses were supported for total sensation seeking scores, we did find relationships between the ERP components and total sensation seeking, boredom susceptibility, and disinhibition.

Guerrero, Emily

Institution: *KY - University of Kentucky*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Elizabeth Rice *Luke Bradley* *Kayla Horne*
Emily Guerrero *Jada Covington* *Lordina Mensah*
Alexis Smith *Andrea Hernandez*

Abstract Name: **The Symphony of the Cell: Using Data Sonification to Engage Students in Molecular and Cellular Biology**

As technology advances in all aspects of our lives, the demand for careers in science, technology, engineering, and mathematics (STEM) hasincreased exponentially. However, many students find STEM challenging, and further, lack key experiencesto gain a sense of belonging in STEM and consider pursuing it as a career. Thus, providing STEM learning modules that introduce key concepts while engaging students can make an impact in addressing this need. A particularly difficult topic for students to understand is the relationship between cells and how the sequence and structure of proteins ultimately contributes to their function. In order to introduce these basic principles to introductory students, our team has constructed a virtual authentic-learning tool that utilizes data sonification in which each amino acid in a protein sequence is assigned a musical note and rhythmic value based on its hydrophobicity. This allows a harmonious musical piece to be composed based on the sequence of a functional protein. Disease-associated mutations become disharmonious which allows users to auditorily identify disruptions in a protein sequence and understand how it impacts the cellular symphony. We will present our preliminary survey data supporting our hypothesis that this data sonification learning module helps students gain an understanding of the molecular basis of disease while improving students attitudes towards STEM.

Guerrero, Jhonathan

Institution: *OK - Southern Nazarene University*

Discipline: **Biology**

Author/Contributors:
Jhonathan Guerrero *Madka Venkateshwar* *Nicole Stratton*

Abstract Name: **BIOMARKER EVALUATION OF NAPROXEN TREATED RAT BLADDER CANCER TISSUES**

Introduction: Bladder cancer (BC) is the second most common cancer of the genitourinary tract. 75,000 Americans are diagnosed with this disease, and 16,700 patients die annually. It is a highly recurring disease and the most expensive to treat. Therefore, it is imperative to prevent this cancer. At CCPDD, experiments are being conducted in animal models to study and identify promising drugs that can prevent the development of BC. In the present study, BC was induced in female rats by administering a chemical carcinogen (BBN) and divided into two groups: placebo (vehicle group) and experimental group (drug-treated). After BBN treatment, rats were administered vehicle or Naproxen (a commonly used pain medicine). After 35 weeks of drug treatment, rats were euthanized, and bladders were excised and graded histopathologically for cancer incidence. Molecular change in drug-treated tumor tissue is studied to compare and correlate with tumor response to the drug. Using Immunohistochemistry, we studied changes in the expression of Ki-67 and Cyclin D1 in response to drug treatment.Methods: Tumors were excised following euthanasia and fixed in formalin. These tumors were further processed and embedded into paraffin blocks. Tissue section measuring 4µm thickness were placed onto slides for hematoxylin and eosin (H&E) or IHC staining. Lastly, stained tissue slides were analyzed for their respective biomarkers and tumors were classified into various categories/stages based on factors such as grade, invasion, and metastasis.Results: When compared to the vehicle group, naproxen treatment inhibited bladder adenocarcinoma formation in drug-treated rats suggesting a chemopreventive potential. Biomarker analysis demonstrated significantly reduced in inflammation and tumor cell proliferation in tumors exposed to naproxen. Complementing this finding, a significant reduction in Ki-67 positive staining and Cyclin D1 expression was also observed in treated tumors.Conclusion: Timely intervention with anti-inflammatory drug naproxen, may help prevent BC development and its progression.

Guetschow, Maggie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Maggie Guetschow,
Antonio DeRosa,
Matthew Haffner

Abstract Name: **Tying Object Counts to Location: A Case Study Using GPS Video Data and the R Project for Statistical Computing**

Object detection methods have improved rapidly over the past several decades, and these methods have the potential to be valuable tools in the study of land use and the built environment. Leveraging these methods, this project demonstrates how counts of objects – such as people, bicycles, automobiles, and street signs – can be extracted and tied to location using GPS video data and the R Project for Statistical Computing. This project is unique in that it makes use of a more flexible and "mobile" sensor deviating from the traditional approach of using a stationary camera. GPS video data was collected with several GoPro HERO 8 cameras mounted to bicycles and captured at locations with various land uses in Eau Claire, Wisconsin. Scripts were created using R packages Platypus, av, exfitoolR, gopro2gpx, and other various packages in the Tidyverse. The scripts (1) ingest GPS video data, (2) extract objects present in individual frames using OpenCV, (3) summarize results in a table, (4) and create maps of object counts. Such an approach can be utilized by other practitioners in land use analysis. Extensions of this project in the future will lead to the development of an installable R package, with user-friendly functions that streamline analytical processes.

Guetzlaff, Gretchen

Institution: *IA - Wartburg College*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Zefanias Ngove,
Gretchen Guetzlaff,
Chaitrali Reddy,
Dr. Sean T Coleman

Abstract Name: **Isolation, Characterization, and Host Range of Novel Microbacterium foliorum Bacteriophages**

Abstract Bacteriophages are viruses that thrive by infecting bacteria, using the host to replicate, and ultimately killing the host. Bacteriophages are essential viruses, and they can be found in different ecosystems and living organisms. Studies on bacteriophages have shown that these organisms have the potential to treat antibiotic-resistant bacteria, given their ability to infect and disrupt a variety of bacterial cells.3 Phage therapy has been a subject of interest in the medical field since the end of WW2, and clinical trials are being conducted to further understand the phage's antibacterial properties. This research focused on bacteriophage isolation, identification, and a host-range test. DNA extraction and sequencing were performed on three out of five phages, and transmission electron microscopy was also performed to identify the family type to which all five phages belonged. Since the phages were collected from different places, upon their successful isolation and purification, their lysates were diluted to the same titers for the host range test to reveal each phage's potential to infect different Microbacterium species, Staphylococcus epidermidis, and Escherichia coli. We found that the five phages have differing host ranges; some also infect S. epidermidis. Genome annotation of the phages Cedar Bank, Extercus, and Guetzie will reveal further information on why each phage has its unique host behavior toward different Microbacterium. Furthermore, genome annotation will also be used to analyze the spike protein, which allows the phages to adsorb to their host species. The genomes of the Microbacterium species will also be compared to elucidate what makes some species more susceptible to different phages, in this case, the Cedar Bank, Extercus, and Guetzie. Further testing is still needed to determine the isolated phages' potential uses.

Gueye, Ibrahima

Institution: *GA - Kennesaw State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jaterien Walker,
Manohar Murikipudi,
Ibrahima Gueye

Abstract Name: **Vicon sensed Post-stroke rehabilitation exercise assessment using Attention-based CNN**

Cardiovascular diseases are one of the concerning problems in the United States. According to CDC, approximately 805,000 people suffer heart-related problems every year, out of which 605,000 are the first time. Physicians suggest rehabilitation exercises to the surviving patients as these exercises will help the patients in bringing back their physical function and mobility before the injury. Due to recent technology amelioration, many are using Motion Capture Systems to perform the suggested movements. To improve the performance of these sensors, we develop a model that concentrates only on dominant parameters skipping the rest. With the help of optimization techniques and algorithms, built models will identify the critical parameters from the inputted data. We introduce an Attention-based CNN model on 117-dimensional Vicon sensor angle data to enhance the sensor's performance in identifying the performed exercise. Convolutional layers in the network will help extract the input data's in-depth features, and LSTM layers mine the long-time series features. We have used the UI-PRMD - Vicon ten movements data for building the proposed model. Our attention model has outperformed many complex architectures with an overall average of 0.007881 MAD and 0.012343 RMSE for ten movements.

Guillory, Christopher

Institution: *OK - University of Central Oklahoma*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Christopher Guillory,
Mohammad Hossan

Abstract Name: **Analysis of Laser Machined Nitinol Flow Diverters for Aneurysms**

Flow diverters have become one of the most efficient endovascular procedures to treat brain aneurysms, which are also known as cerebral aneurysms. Presently, flow diverters (FDs) are mainly braided from microwires such as nickel titanium (nitinol) and chromium-cobalt alloys. The controlling design parameters of the braided FDs are limited. The purpose of this research is to explore the possibility of making fine meshed non-braided nitinol FDs using precision laser machining and studies the effect of the laser parameters on the quality of laser fabricated nitinol FDs. Fine pores were designed and then fabricated using a precision fiber laser machine with varying laser powers, focal distances, laser translation speeds/passes and cooling media (air and underwater). The fabricated FDs were polished using an in-house custom polishing tumbler. The surface quality of the fabricated FDs were evaluated using scanning electron microscope (SEM) and high-resolution images. The degree of surface burning was quantified with a scale from 1 – 10 using high resolution images. The results showed that the laser power and focal distance have a pronounced impact on avoiding excessive burning of the surface and bulge formation. Water as a cooling media provides more flexibility in selecting laser power and passes. However, the frequent refilling of water was inconvenient since the water was evaporating too quickly. Fine tuning of laser power and passes with air cooling provided burn free and high surface quality FDs. The findings of this study will contribute to the development of non-braided FDs for the treatment of brain aneurysms with more controllable parameters.

Guindon, Grace

Institution: *MA - Bridgewater State University*

Discipline: Education

Author/Contributors:
Grace Guindon,
Anthony Barrasso

Abstract Name: **Effects of Narrative Case Studies in Science**

In information-dense introductory science courses, students are required to define, describe, and explain complex mechanisms, and then expected to retain, recall, and apply that information in upper level courses. However, many introductory course curricula do not provide the proper context for how these concepts apply to real life scenarios. Case-based learning is an active learning method that uses short narrative case studies to demonstrate to students the real-world applications of course content and encourage them think critically about what they are learning in lecture. Previous studies have shown that introducing case-based learning in a variety of science courses has correlated with improvements in student comprehension and knowledge retention and increased student satisfaction and interest in science. In this study, we aim to develop a series of narratively connected case studies for a 200-level Human Anatomy and Physiology course and determine the impact of these cases studies on student learning outcomes and course satisfaction. We hypothesize that replacing traditional assessment with these case studies will improve higher-order cognitive thinking skills, increase knowledge retention, and make our course more enjoyable for students. In this presentation, we will explain our process and rationale for developing five narratively connected case studies focused on concepts from the endocrine, cardiovascular, respiratory, digestive, and urinary systems. In addition, we will compare preliminary results from two class sections. One section will be assigned traditional quizzes on these body systems and the other will have those quizzes replaced with our case studies. Findings from this study will provide educators with resources for developing and implementing case-based learning assignments in their courses, and add to the growing body of literature aimed at assessing the impact of case based learning on student outcomes.

Gulbrandson, Anders J.

Institution: *MD - Naval Academy*

Discipline: Chemistry/Materials Science

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Abstract Name: **Fabrication of UV-Protectant Cellulose-Nanoparticle Composites through a Mesoporous Fiber-Welded Intermediate Structure**

The Natural Fiber Welding (NFW) process produces mesoporous, cellulosic materials through partial dissolution of the biopolymer surface with ionic liquid and subsequent rinsing with a non-polar solvent gradient. In this study, nanoparticles of titanium dioxide (TiO2) and zinc oxide (ZnO), two common mineral sunscreen ingredients, were incorporated into cotton from a colloidal suspension using a fiber-welded, mesoporous intermediate structure. Scanning electron microscopy, energy dispersive X-ray spectroscopy, atomic absorption spectroscopy, and diffuse transmittance UV/Vis spectroscopy were used to characterize the composites. The data reveal how this approach can deliver composites with high nanoparticle loadings and enhanced ultraviolet protection that is sustained through multiple washing cycles.

Gumabong, Alayna

Institution: *FL - Florida International University*

Discipline: Biology

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Abstract Name: **Quality Control In 16s-Based Microbiota Compositional Analysis**

Introduction: A microbiome is a collection of microorganisms in a specific ecological niche, e.g., the human gut, and their associated metagenome. Human microbiota has been widely recognized as a key mediator in both health homeostasis and many pathologies. High-throughput sequencing of the 16S rRNA gene, the bacterial marker gene, has led to the generation of massive metagenomic data, creating a pressing need for efficient bioinformatic protocols to process the raw sequence reads. Significant ambiguity exists as to how to best perform 16S-based microbiota compositional analysis, as many programs exist for this purpose. This study evaluated three of the most used algorithms for taxonomic inference (DADA2, QIIME2, and mothur). Additionally, parameters for quality control of sequence reads were examined and optimized because there is a growing recognition to move away from “off-the-shelf” data processing.Method: Two key parameters, based on Illumina-assigned quality scores, were isolated across our pipelines: (1) limits on allowed base-pair errors per short-read fragment and (2) truncation of erroneous read ends based on a quality score threshold. First, impact of parameter value on retention of input sequence reads was assessed. Then, output compositions were compared to a known mock community via weighted UniFrac distance.Results: How parameters are set significantly affects read retention. Optimal value for allowed error limit was pipeline-specific while there was unanimous agreement on best quality score threshold for read truncation. Sensitivity and specificity of mock community approximation varied by pipeline.Conclusion: To improve inference of microbiota compositions, 16S-based analysis must be performed with consideration for unique user dataset. Results generated based on this marker gene should be interpreted with caution.

Gunda, Varun

Institution: *TX - The University of Texas at Dallas*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Varun Gunda *Antra Ganguly* *Shalini Prasad*

Abstract Name: **Label-free, point-of-care urine biosensor for the diagnosis and management of Chronic Kidney Disease**

Chronic Kidney Disease (CKD) is a serious health problem that affects nearly 8-16% of the global population. If left undiagnosed, it can lead to end-stage renal disease (ESRD) where treatment options become limited and increasingly expensive, and dialysis or a kidney transplant may be required to maintain life. Early detection of CKD is crucial for treatment success and improved patient outcomes. Creatinine (UCr) and chloride (Cl-) are two key urinary biomarkers that are used to assess kidney health and renal function. In this work, we have developed a label-free, point-of-care electrochemical biosensor that can reliably detect Creatinine and Chloride levels in urine samples of <100 µL in under 5 minutes.An affinity-based, planar gold three-electrode system was used to detect these biomarkers in their physiologically relevant ranges in human urine. A highly specific ssDNA aptamer was used to capture creatinine molecules while a highly selective, synthetic chloride ionophore was used to capture the chloride ions. The binding of thebiomarkers to their respective capture probes resulted in a modulation of electrical properties at the electrode-urine buffer interface. At its core, the biosensor relies on Electrochemical Impedance Spectroscopy to transduce subtle changes at the input Creatinine and Chloride levels in neat, unprocessed urine and can operate over a wide dynamic range of 0.15-5 mg/mL for Creatinine and 15-105 mM for Chloride. Using a combination of these biomarkers, it was demonstrated that our sensor is capable of disease state classification for timely triage and precision therapy.The developed sensor can act as a companion diagnostic tool that can help physicians by improving patient outcomes through early diagnosis, timely management, and successful treatment of CKD. Further, it can be used for routine self-monitoring of renal health at home, which can reduce the financial and psychological burden on patients and their families.

Gunderson, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

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Grace Gunderson,
Samantha Williams

Abstract Name: **The Assessment of Aging Self-Efficacy: A Comparison of Persons in Rural and Urban Environments**

Extant research shows that age-related physical and mental health outcomes often differ between persons based on the degree of urbanization of their living environment. These health outcomes differ in relation to factors such as socioeconomic status, health care access, nutritional intake, socialization opportunities, etc. However, the potential role of aging self-efficacy has not been explored. Self-efficacy itself has been studied in various adult populations, but only in the sense of their current life situations. A sample question related to memory performance might be “How able are you to remember life events from the past week?” The current study, however, will investigate prospective aging self-efficacy, which is a person’s sense of how able they will be to age healthily. A sample question (directed at a younger adult) might be “How able will you be to remember life events from the past week when you are 80 years of age?” Additionally, this mixed-methods study will investigate the reasons adults hold the beliefs they do. For example, a person answering the previous question might say that they believe they will not be able to remember the events of the past week when they are 80 years of age because their older relatives were unable to do so; or they may hold generally negative stereotypes about aging (e.g., all older adults have a bad memory). We hypothesize that aging self-efficacy will differ between undergraduate participants based on the degree of urbanization of their childhood hometowns such that those from more rural environments will feel less able to age healthily compared to those from more urban environments.Additionally, we expect that those who expect more negative aging outcomes will report feeling less in control of their aging process and hold more negative stereotypes about aging than those who expect more positive aging outcomes.

Gunderson, Keegan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

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Keegan Gunderson

Abstract Name: **Understanding the Molecular Mechanism of Opioid Action in the Human Body Through a Course Embedded Computational Research Project**

Chemistry has and will continue to play an essential role in the development of new drugs. Specifically, chemical synthesis has resulted in several synthetic opioids, for example, morphine, oxycodone, and codeine. In this research, the goal is to gain an improved understanding of the interaction between an opioid and the opioid receptors present in the human nervous system and determine which pain relievers are the most effective. In general, the two chemical properties that regulate the reactivity of a molecule are its electronegativity, or the ability of an atom in a molecule to attract electrons, and chemical hardness, which is the ease with which the atom’s valence electron clouds can be distorted. The chemical properties of twelve prescription pain medications are investigated computationally. The drug molecules are constructed using a web-based tool WebMO, and their electronegativity and hardness are determined using a quantum chemistry program called Q-Chem. Also, the interactions between prescribed opioids and opioid receptors are analyzed using the online resource SWISSDOCK. Additionally, SwissADME is used to investigate the pharmacokinetics of each drug molecule. Our findings will offer insight into how different opioids interact with opioid receptors and how that information could be used in developing better pain medications. The preliminary results of the research will be presented.

Gunn, Matthew

Institution: *VA - Randolph-Macon College*

Discipline: Engineering/Applied Sciences

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Matthew Gunn,
Zachary Cullingsworth

Abstract Name: **Valuable Time Saved: Designing and 3D Printing a Prototype to Reduce Bladder Irrigation Procedure Time**

Bladder irrigation is a medical procedure that repeatedly flushes the bladder with a saline solution after an operation to reduce blood clots. The existing procedure for bladder irrigation involves repeatedly disconnecting and reconnecting syringes to different catheters which creates an inefficient process. The objective of the research project was to create a prototype device that would simplify the bladder irrigation process and reduce the procedure time. The prototype device has three outlets and a handle that allows the user to change the directional flow without moving the syringe. 10 different iterations of the prototype were designed and 3D printed. An iterative design process was applied to make improvements between each iteration after they were tested for functionality and watertightness. An experiment tested the time to flush the bladder for the existing procedure and the novel procedure using the prototype device. The procedures contained common steps of filling and emptying the syringe and the distinct step of changing the connection by either disconnecting and reconnecting the catheter or twisting the prototype device. An average time for each step was found across 30 trials, and the average aggregate time for the existing procedure was 44.2 seconds while the time was 39.6 seconds for the procedure using the new prototype. A statistically significant 10.5% time reduction was accomplished using the prototype. The time to complete one cycle of flushing the bladder was used in the experiment, but the bladder is flushed multiple times during bladder irrigation leading to a larger overall time difference. Future work would include utilizing different manufacturing techniques to improve watertightness and conducting additional experiments to determine differences in leakage and patient comfort between the existing and novel procedure.

Gunn, Megan

Institution: *VA - Randolph-Macon College*

Discipline: Engineering/Applied Sciences

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Megan Gunn,
James McLeskey

Abstract Name: **Fabrication and Characterization of Photovoltaic Devices in Air**

Photovoltaic cells are devices that convert light energy into usable electrical energy. Perovskite solar cells are a widely studied type of photovoltaic cell produced by depositing thin films of compounds with perovskite structure. While perovskite devices have progressed to high efficiencies, manufacturability of the devices must be addressed for them to become commercially viable. Most current fabrication methods are conducted inside a glove box, which makes large-scale manufacture complex and expensive. The goal of this research is to develop a procedure to fabricate perovskite solar cells in ambient conditions to simplify and improve manufacturability. Fluorine-doped tin oxide (FTO) coated glass substrates were etched using zinc powder and hydrochloric acid. Once etched, the glass was cleaned sequentially using acetone, isopropyl alcohol, and deionized water in an ultrasonic bath. A solution of titanium dioxide and acetic acid was then spin coated onto the substrates to form a mesoporous layer. After heating the samples, a solution of lead iodide and methylammonium iodide (MAPbI3) was spin coated to form a thin film. The device was then quickly heated to dry the perovskite layer before a thin layer of gold electrode was sputtered over the film. The entire procedure was completed outside of a glove box under ambient conditions.Once the devices were fabricated, the samples were immediately tested. When exposed to light, the devices demonstrated photovoltaic activity and behaved as photodiodes. Future research includes exploring alternatives to lead, such as tin, as well as refining the procedure to improve the efficiency of the devices.

Gunther, Gavrielle

Institution: *MN - University of Minnesota - Duluth*

Discipline: Psychology/Neuroscience

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Ryan Hjelle

Abstract Name: **Sex Differences in the Relationship Between Psychopathy and Cerebral Lateralization During an Empathic Challenge.**

Hemispherical dominance or cerebral lateralization is characterized as activity in the brain being elevated in one hemisphere more than the other, typically during presentations of affectively laden stimuli. The right hemisphere is associated with feelings of negative affect, while the left hemisphere is associated with positive emotions (Robinson and Price, 1982). Empathetic responses in relation to hemispheric dominance and the degree of psychopathy has not been examined in non-clinical populations, and sex of participant even less so. Social/emotional processing in females may differ from males; the human brain is sexually dimorphic, with various structures being different between the sexes (Nopoulos et al., 2000).Using the ratio of alpha power between the left and right frontal cortices (F3 vs. F4) as an index of relative cerebral activity, we found a non-significant linear (R^2 = 0.005, F = 0.096; p = 0.760) but a near significant quadratic (R^2 = 0.248, F = 2.803, p = 0.089) negative relationships between right hemisphere lateralization and psychopathy when viewing a highly empathic video of someone in distress. Females had a strong relationship between psychopathy scores (LSRP, Levenson, et al, 1995) and lateralization (R^2 = 0.003, linear; R^2 =0.319, quadratic). Females low in psychopathy demonstrated stronger right hemisphere activation when viewing the empathetic stimulus. Females high in psychopathy had less cerebral lateralization. Males showed a weaker relationship between lateralization and psychopathy scores (R^2 = 0.039, linear; R^2 = 0.272, quadratic). Group size (12 females, 8 males) may have resulted in insufficient statistical power to demonstrate a significant overall effect or a much stronger relationship in females.

Gupta, Prakhar

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biology

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Abstract Name: **Developing Computer Vision Tools for Automatic Animal Behavioral Classification**

Automating the classification of animal behavior is a major challenge in neuroscience. In recent years, machine learning and computer vision techniques have become part of the neuroscience toolkit for the high-throughput study of animal behavior. While progress has been made, existing strategies for behavior classification require the preprocessing step of keypoint prediction. Keypoints, which are 2D coordinates that describe locations of body landmarks (e.g., snout, hind limb, tail base, etc.), are a useful abstraction scientists often go through because tools for keypoint estimation are accessible, and keypoints are a high signal to noise abstraction for describing an animal's position and locomotion - and are easy to represent. While keypoints carry a lot of relevant signals for reasoning about complex locomotion sequences, we hypothesize that the raw RGB video data itself (from which key points are predicted) could be invaluable for reasoning about behaviors since many behaviors of interest are visually indicated. We will compare behavior classification strategies that directly predict behaviors from RGB video (without the abstraction of keypoints), to existing methods that utilize keypoints. To do so, we will construct a dataset of animal behaviors, along with thorough validation of the various classification strategies on our behavior classification dataset. We anticipate that RGB video behavior classification models will perform competitively with models that go through the abstraction of keypoints when classifying behaviors.

Gutierrez, Antonio

Institution: *TX - San Jacinto College*

Discipline: Physics/Astronomy

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Mallika Gyawali

Abstract Name: **Decadal Variations of Six Criteria Air Pollutants Over Texas**

The Clean Air Act requires the US Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as “criteria air pollutants”). These six pollutants are carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulfur oxides. These pollutants are found all over the U.S. They can harm health and the environment and cause property damage. The EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standard in accordance to the Clean Air Act. States must develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to achieve the criteria for each area designated nonattainment for a NAAQS. This study presents in-situ surface measurements from the Air Quality System (AQS) EPA for six air pollutants from 2005 to 2022, as well as the weekly, monthly, and yearly trends for these pollutants over Texas’ major population centers. This study will analyze these trends for any correlation with petrochemical industry, vehicle usage, technological advancement, and natural events. Although the overall trend is that of a decrease in the concentration of these pollutants over time, it is worthwhile to explore more granular trends in an effort to identify their underlying causes.

guyon, dylana

Institution: *CA - San Diego State University*

Discipline: Chemistry/Materials Science

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Yong Yan

Abstract Name: **Photocatalytic synthesis of Atropisomeric Indoles with an N-C Chiral Axis using CsPbBr3 Chiral Perovskite Nanocrystals**

Our objective is to propose an efficient methodology for therapeutic agent synthesis providing a novel approach toward axially chiral N-C bonds of heterocycle targets. With the use of our catalyst chiral perovskites, we should be able to efficiently synthesize pharmaceutical motifs using photocatalytic reactions. We propose that if we use a chiral ligand in our perovskite, then it will give us the atropisomer chiral indole compound. With the use of our first synthesized chiral perovskite (CP1), we obtained a yield of 50% but no enantiomeric excesswas detected. Therefore, we determined that if we use a more suitable chiral perovskite then we will get a higher enantiomeric excessand a higher yield. With the use of our second chiral perovskite (CP2), we received a yield of 37% and 30% enantiomeric excess, which concludes our hypothesis that if we use a suitable chiral perovskite, we will get the chiral product with enantiomeric excess. Funding Acknowledgement:This project was supported by NIH MIRA to Y.Yan.This project was additionally supported by the National Cancer Institute of NIH under award numbers U54CA132384; U54CA132379.

Guzma, Aidan

Institution: *PA - Westminster College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Aidan Guzma

Abstract Name: **Effect of short-term hormone treatment on the behavioral anxiety response in adult zebrafish when exposed to acute stress**

Chronic hormonal treatment may have significant effects on anxiety levels and, as a result, observable behavioral stress responses. Previous literature has suggested hormone treatment may affect psychological structures, shoaling behavior, and development, but no previous literature has focused on the relationship between hormone treatment and anxiety like behaviors. Adult zebrafish were treated with a 25ηM concentration of either 17-βestradiol or 11-ketotestosterone for 14 days, then exposed to an acute stressor before fish were placed in the novel tank test for observation. The zebrafish were randomly assigned among ten three-liter tanks that housed individual small groups. These small groups consisted of no more than five and no less than three fish. Each fish had the possibility of being assigned to one of three groups: control, 17-βestradiol hormone treatment, and 11-ketotestosterone hormone treatment. To ensure proper hormone concentration was maintained during constant exposure, water was changed out every second day. Temperature (25°C±1) and pH (7.0-7.2) were monitored daily to make sure the environment was consistent. Upon completion of the 14 day treatment period, all zebrafish groups were exposed to an acute stress, net chasing, for a total of two minutes, then were immediately placed in a novel tank to measure behavioral responses. Responses were recorded based on the amount of time it took the fish to transition into the upper portion of the tank (latency period), total transitions to the upper tank, total time spent in upper portion of the tank, and number of freezing bouts. No significant results were found based on anaylsis of treatment or gender differences in relation to modified behavioral stress responses.

Guzzo, Jessica

Institution: *AZ - Northern Arizona University*

Discipline: Biology

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Meagan Owens *Katrina Urrea* *Megan Wilkinson*
Karen Haubensak

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After three months of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Gwon, Seongyo

Institution: ***GA - Kennesaw State University***

Discipline: English/Linguistics

Author/Contributors:
Seongyo Gwon

Abstract Name: Promoting and Retaining bilingualism in multicultural houses in South Korea: Experiences of bilingual coaches

The dominant assimilation practice and policies in South Korea have translated into monolingual, Korean-only practices in all aspects of the society. Nevertheless, it is worth noting that the major recent government policies reflect an assets-based perspective on immigrant mothers' heritage languages (HLs) and their children's potential bilingualism. Since 2015, bilingual coaching services have been provided for multicultural families under the initiative called Bilingual Education Environment Fostering Plan. Bilingual coaches with immigration backgrounds educate the families about bilingual education, teach parents strategies about interacting with preschool children in their first language, foster a community for the families, and provide further guidance to families about bilingual. Given most children continue to be deprived of the right to acquire mother tongue in the South Korean context, initiatives like the bilingual coaching program hold promise. Examining the ways, it is actually implemented from the perspective of the practitioners could help sustain a well-intended program, which contributes to the children's bilingual and bicultural development. The current study aims to explore perspectives and experiences of bilingual coaches who work at local Health Family Support Centers across South Korea. Data primarily collected from individual interviews with seven bilingual coaches, who were originally from China, Japan, and Vietnam. Thematic coding method yielded that all coaches emphasized the immigrant mothers' dedication to bilingual education as the most important factor in promoting bilingualism in the family. They also drew on their own experiences as immigrants in South Korea when coaching other families. While they found the work rewarding, they also pointed out challenges, such as heavy caseloads, not having expertise in early childhood education, and having to coach families in whose language they do not have proficiency. The ongoing research has implications for policies, programs, and practices for multicultural families and children beyond the South Korean context.

Gyawali, Mallika

Institution: ***TX - San Jacinto College***

Discipline: Physics/Astronomy

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Abstract Name: Decadal Variations of Six Criteria Air Pollutants Over Texas

The Clean Air Act requires the US Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as "criteria air pollutants"). These six pollutants are carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulfur oxides. These pollutants are found all over the U.S. They can harm health and the environment and cause property damage. The EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standard in accordance to the Clean Air Act. States must develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to achieve the criteria for each area designated nonattainment for a NAAQS. This study presents in-situ surface measurements from the Air Quality System (AQS) EPA for six air pollutants from 2005 to 2022, as well as the weekly, monthly, and yearly trends for these pollutants over Texas' major population centers. This study will analyze these trends for any correlation with petrochemical industry, vehicle usage, technological advancement, and natural events. Although the overall trend is that of a decrease in the concentration of these pollutants over time, it is worthwhile to explore more granular trends in an effort to identify their underlying causes.

Haas, Carly

Institution: *PA - Allegheny College*

Discipline: Chemistry/Materials Science

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Carly Haas,
Alice Deckert

Abstract Name: **Effect of Steric Hindrance on the Kinetics of a Silver Nanoparticle Surface Substitution Reaction**

Biosensors are devices that detect a wide variety of biological molecules. During the design of many biosensors, a receptor needs to be immobilized onto a transducer surface. A frequently used reaction to complete this attachment is through a nucleophilic substitution reaction between a surface-tethered NHS ester and the desired macromolecule. However, the research into the kinetics and mechanism of this reaction is lacking, and these insights would aid future rational design of biosensors depending on the steric bulk of the receptor. This study investigated the rate and mechanism of a substitution reaction with imidazole and sterically-hindered derivatives with tethered NHS esters on a silver nanoparticle surface using SERS Raman spectroscopy. A slower rate of reaction with increasingly sterically hindered imidazole compounds suggests a possible mechanistic change from an SN2 to SN1 mechanism for very bulky proteins.

Haas, Sydney

Institution: *FL - New College of Florida*

Discipline: Biology

Author/Contributors:
Sydney Haas

Abstract Name: **Using Limulus Amebocyte Lysate (LAL) to Discover the Presence of Endotoxins in the Tanks at the Pritzker Marine Biology Research Center**

Endotoxins are harmful for many organisms, including those that live in the water. Therefore, it is important to identify effective ways in identifying if they are present in water environments. Research has been conducted to show that Limulus amebocyte lysate (LAL) is an effective way to determine if endotoxins are present. In this study, LAL was used as the main reagent to detect if endotoxins were present in the tanks at the Pritzker Marine Biology Research Center. It is believed that LAL will be able to detect the presence of any endotoxins in the tanks at Pritzker. The first part of the procedure to do this was to collect 5mL of water from each tank at Pritzker. After the LAL reagent was dissolved in LAL Reagent Water, the gel-clot assay was then produced. 0.1mL of the reagent was added to each assay tube. 0.1mL of each product sample or control was transferred into each assay tube, beginning with the negative control and ending with the highest endotoxin concentration. The contents of the tubes were mixed and incubated undisturbed in a 37 C heating block for 60 minutes. After incubation, each tube was examined for gelation. A positive test is defined as the formation of a firm gel capable of maintaining its integrity when the assay tube is inverted 180 degrees. A negative test is characterized by the absence of gel or by the formation of a viscous mass which does not hold when the assay tube is inverted. Endotoxins were detected in an average of 13 tanks at Pritzker. To expand upon these findings, quantifying how many endotoxins are present in the tanks and what types of endotoxins are present in the tanks will be tested.

Haas, Tim

Institution: *MN - University of Minnesota - Duluth*

Discipline: Biology

Author/Contributors:
Tim Haas

Abstract Name: **Insect Net Worth: comparing traditional entomological surveys and citizen-science data to monitor insect diversity**

Globally, entomologists seek to determine if insect diversity is declining in response to human activities,like habitat loss, pesticide use, and climate change. With a need to establish baseline counts of insect species richness to monitor these levels, this study aimed to catalog historic diversity housed in the University of Minnesota-Duluth insect collection, and use it to assess two methods for monitoring insect diversity: a traditional insect collecting survey and crowd-sourced photographs from iNaturalist, a citizen-science platform used for organism identification. To assess which method optimizes diversity and time, specimens collected during asystematic entomology classsurvey around UMD between July and September 2020 were compared to iNaturalist occurrences with more than two agreeing identifications in Saint Louis County observed during 2020, using Saint Louis County specimens in the UMD insect collection to highlight total species diversity within the county. By quantifying several factors influencing data use for seven families of insects, such as collection effort, richness, and identification rate, I was able to identify strengths and weaknesses of each collection method for long-term diversity monitoring projects and identify points of focus for improving the diversity captured in the UMD insect collection. iNaturalist yields many specimens with little time input, with a greater ability to capture short-season groups or highly active groups that are easily identifiable. Traditional sampling methods, while requiring much more time, are vital for groups with minute differences between species, and provide a wealth of information that is not provided by photographs alone. These trends are critical to take into account when designing long-term sampling surveys to monitor insect diversity to yield scientifically useful specimens while optimizing collecting efforts.

Habib, Semper

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

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Emily Mroz

Abstract Name: **Does Chronic Illness Diagnosis Alter Sense of Purpose in Older Adults?**

Maintenance of a sense of purpose serves as a psychological resource for late-life health. A strong sense of purpose in older adulthood is associated with a reduction in health incidents (Kim et al., 2013) and mortality, and lower psychological distress (Musich et al., 2018). Limited research has examined whether one's purpose is threatened by chronic illness diagnoses. This study leverages data from the National Health and Aging Trends Study (NHATs; N = 831) to establish trajectories of purpose across three such diagnoses (i.e., dementia, heart disease, no diagnosis) using three-year (pre-diagnosis, year of diagnosis, post-diagnosis) timespans. Results demonstrate a decrease in purpose following a dementia diagnosis ($F=9.18$, $p=.001$, $n2=.05$) which deviates from trajectories of those who received a heart disease diagnosis ($F=3.04$, $p=.05$, $n2=.006$) or no diagnosis ($F=1.29$, $p=.24$, $n2=.001$), where purpose did not change over time. Findings suggest that older adults who receive a dementia diagnosis are vulnerable to a threatened sense of purpose. Interventions that support health priorities navigation and pursuit of purpose despite diagnosis appear to be a priority for dementia care.

Hackerson, Will

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Music

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Aleah Vincent

Abstract Name: **Equilibrium Quartet presents Keen by Roshanne Etezady**

Equilibrium is a saxophone quartet at the University of Wisconsin-Eau Claire. The quartet was formed in Sepember of 2021 and is composed of undergraduates students, all with different majors: music education, applied instrumental music, integrated strategic communication-advertising, and biology. In our time as a quartet, we have performed in master classses, auditioned for competitions, and prepared multiple recitals.As an ensemble, we are interested in exploring timbre, balance, and color within the constraints of saxophone quartet. The saxophone is an incredibly flecible instrument capable of producing a wider range of wounds and colors. Roshanne Etezady's piece,Keenutilizes the saxophone quartet's unique ability to blend into one homogenous sound by leaning on droning characteristics to drive the piece. Etezady also highlights the individual instrument's timbral qualities in solo passages. We chose this piece because it explores a wide range of colors and challenges musicians to maintain consistent blend and balance in the extreme registers and dynamics of the saxophone. We are excited to share the music of Roshanne Etezady, a contemporary classical composer who uses timbre and balance to capture intense emotions in the pieceKeen. To keen means to express grief with a loud and sustained cry of sorrow. Etezady uses the concept of keening to stucture the piece and model the emotional affect of the title. However she goes beyond imitating this human response to grief. The unison drones are contrasted by shifting melodic lines andintense dissonances that further evoke a distressing affect. In our performance, we hope to convey this intense feeling of sorrow and highlight the work of composer, Roshanne Etezady.

Hady, Mikayla

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

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Michael Walsh

Abstract Name: **Improving diagnosis of kidney cancer using Infrared Spectroscopic Imaging**

Infrared Spectroscopic Imaging has been shown to be a powerful approach to rapidly image human tissue biopsies to identify biochemical signatures associated with disease outcome. In this study we have applied two types of IR imaging to distinguish between two types of kidney cancer, chromophobe and oncocytoma. These two cancers represent a very difficult problem for the medical community to diagnose as the clinical symptoms are similar and they look almost identical to the experience pathologist. Definitive diagnosis between the two types is critical as the treatment options and prognosis for these two kidney cancers are very different. In this study we demonstrated that tradition IR imaging using a Fourier Transform based approach could allow for excellent objective diagnosis of these cancers. A newer faster laser-based approach which has potentially better applicability for clinical practice also demonstrated classification between the two groups. A comparison of the results between the two imaging tools will be compared and contrasted. Furthermore, we will present some new results about how kidney cancer can be effected by the diabetic status of the patient.

Hafey, Shannon

Institution: *MA - Bridgewater State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Shannon Hafey,
Catie Anderson

Abstract Name: **Examining the Experiences of STEM Students in Linked-Learning Communities**

Women, students of color, and students of low socioeconomic status are historically underrepresented in science, technology, engineering, and mathematics (STEM) programs. While women are half of the population, they only make up 34% of STEM workers in the United States. African Americans, Latinx individuals, and Alaska Natives make up 23% of the STEM workforce, despite being 30% of the population (National Science Foundation, 2021). Disparities in representation for minority groups perpetuate stereotypes about who belongs in STEM (Brockman, 2021; McGee et al., 2017), while also limiting the voices and contributions of a broader population. Interventions, such as linked-learning communities (Goldman, 2012), diversity programs (Burt et al., 2020), and mentoring programs (Apriceno, 2020) have been introduced in STEM programs to combat underrepresentation; however, the research thus far is predominantly quantitative. While providing useful insight, quantitative data does not reflect unique individual experiences, so qualitative research would better allow for understanding of student experiences. The College of Math and Science at Bridgewater State University is conducting a randomized control trial on linked-learning communities of first- year STEM students. In these linked-learning communities, students take three classes together to build community and sense of belonging. As part of the larger study, this research will examine the role of linked-learning communities among STEM students with varying social identities and backgrounds. Students will answer open-ended questions regarding their experiences in the college, in their major, with peers and faculty, and their personal identities during semi-structured interviews. Data will be analyzed using thematic analysis to identify patterns (Braun; Clark, 2020). We anticipate that students will highlight connections with peers that were supported through the linked- learning communities. This examination of student experiences will increase our understanding of student success and belonging in STEM, particularly for traditionally underrepresented students.

Hagen, Alina

Institution: *FL - The University of Tampa*

Discipline: Art/Music History

Author/Contributors:
Alina Hagen

Abstract Name: **A Potential Picasso: A Syncretistic Signature Analysis between Pablo Picasso and a Thrift Shop Find**

Since the summer of 2019, Museum Studies and Chemistry students at the University of Tampa have collaborated on the “Potential Picasso Project,” an interdisciplinary investigation of a “thrift shop” painting signed “Picasso 1905” in the lower left corner. This project installment utilizes art historical and forensic graphological resources to conduct a syncretistic analysis of the signature evidence to determine if attribution of the subject artwork can be made to Pablo Picasso according to his signature conventions from 1904 to 1906. The year 1905 is significant when conducting art historical research regarding Picasso, as it marks a shift from his stylistic “blue period” to the “rose”. Therefore, signed, authentic oil paintings created by Picasso across both stylistic periods (during the years 1904, 1905, and 1906) have been selected to establish a set of qualitative signature conventions to compare the subject artwork against. Concurrently, an analysis of a large sample of Picasso’s main body of work from this period, pulled from a catalog raisonné, determined how often and where Picasso signed his work and how often he dated it. This quantitative analysis establishes a statistical foundation for determining the probability that Picasso made the subject artwork during the period in question. Preliminary evidence collected during the Fall term shows that Picasso often signed his work; however, observed signatures seldom match the one found on the subject artwork. This suggests several possibilities: the subject artwork was not painted by Picasso and is a forgery, the subject artwork was painted by someone close to Picasso who believed they could replicate his painting style, or the artwork may be an authentic Picasso but does not belong to the year 1905.

Hagloch, Cody

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cody Hagloch

Abstract Name: Walleye Size Structure in Mississippi River Pools 11 and 13 Relative to Harvest Regulations

Size structures of a fish population provides managers with valuable information to set regulations. Biologists create these regulations to improve size structures for anglers' preferences and prevent any future stunting of a population. The objectives were to determine if walleye size structure increased in a pool after a regulation change was in place. Plus, to see if the regulation change made a positive impact on the size structure on one pool compared to another that had no regulation change. Walleye from pools 11 and 13 on the Mississippi River were sampled in during the fall months from 1993 to 2014; with having a regulation change occur in pool 13 during 2004. The walleyes were sampled using electrofishing from a boat. Wings dams were targeted and shocked on the upstream side. Walleyes that were caught were measured to the nearest millimeter. Fin clips were used to distinguish if a walleye was already captured or not. Pool 13 had an improvement to the size structure after the new regulation took place. Pool 11 had shown no drastic change before nor after pool 13 had a change in regulations. Although, there was no significant difference between pools 11 and 13 average lengths before and after the regulation change. This study can conclude that a change in harvest regulations could positively increase the size structure and value the larger portion of a population.

Haider, Maliha

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Maliha Haider

Abstract Name: Evaluation of Star Rating and Text Reviews

A popular field of study in research is opinion mining in subjective text, such as reviews, tweets, and other forms of data. This study aims to analyze the similarities and differences in the sentiment between text reviews (qualitative) and numeric star ratings (quantitative) on Yelp using sentiment analysis tools. To conduct this study, the Yelp dataset is retrieved from the Yelp Open Dataset, which contains 7 million reviews and 150K businesses. This dataset consists of five large JSON files, including a business, checkin, review, tip, and user file. To process these files and make them easier to read, they are converted to CSV files. The CSV file that contains the Yelp reviews is plugged into a Python program that includes four sentiment analysis tools: TextBlob, Vader, an NRC Lexicon, and Stanza. Because the sentiment analysis tools and Yelp's star rating have different ranges, the values and 5-star ratings are normalized to a 0 to 1 scale. A subset of the data (3,500 reviews) and their normalized sentiment scores are taken and plotted on scatter plots to visualize similar trends and differences between the 5-star rating with TextBlob, Vader, NRC Lexicon, and Stanza. The subset of data is then put through a Python program that returns the Pearson correlation coefficient between the star rating and sentiment analysis tools to measure how well they are related. The chi-square test is also performed on the subset of data to compare the observed and expected results. To further this project, we use machine learning techniques to make the sentiment of the reviews to predict the 5-star ratings so that it can be used for products or businesses on different platforms that do not have a star rating.

Haindfield, Connor

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Chemistry/Materials Science

Author/Contributors:
Connor Haindfield,
Heather Schenck

Abstract Name: Active Learning Pedagogy in Organic Chemistry: Analysis of Final Exam Data

Organic Chemistry is a notoriously challenging course, required for pre-Health majors, with drop and failure rates commonly in excess of 30-40%. This project examined the effect of active learning on reaction mechanism pedagogy to increase engagement and decrease student failure rates. We studied two semesters with no active learning pedagogy, two semesters with half active learning pedagogy, and two semesters with full active learning pedagogy. Preliminary results suggested that student achievement greatly improved and drop/failure rates were halved when active learning was used, as shown by analysis of formative (ungraded) assessments. Upon review of final exam data of the studied semesters, we found that our analysis strongly supports the preliminary findings from formative assessments and drop/D/F rates. Taken into combination, the aggregate data provide strong support for the effectiveness of active learning in this “hardest college course”. In order to analyze the data in question, we developed rubrics that applied to 6 semesters worth of final exams. Students had better mechanistic understanding and knew how to portray a mechanism better when they were exposed to more active learning in their organic chemistry semester. In these rubrics, students were not given a grade, but rather scored based on individual steps in the mechanisms in question. These scores were based on logic and mechanistic reasoning rather than simple correctness, as our study seeks to analyze the effect of active learning on student understanding rather than memorization of mechanism steps.

Hale, Frank

Institution: ***SC - The Citadel***

Discipline: Physics/Astronomy

Author/Contributors:
Alexandria Carter,
Frank Hale,
Kaelyn Leake

Abstract Name: Wearable Carbon Dioxide, Oxygen, Carbon Monoxide, and Methane Sensor within OSHA limits

According to the Center for Disease Control and Prevention, accidental gas poisoning affects approximately 50,000 people every year in North America alone across a wide variety of locations. A wearable, lightweight device that detects toxic forms of gas is ideal when prioritizing safety for individuals who need this information displayed while on the move. The purpose of this experiment is to design one device that measures exposure to common toxic compounds found in nature: Carbon Dioxide (CO2), Oxygen (O2), Carbon Monoxide (CO), and Methane (CH4). The current design uses gas sensors from Adafruit, Arduino, and Grove to detect dangerous concentration levels. The Occupational Safety and Health Administration (OSHA) defines maximum exposure in parts per million (ppm). A microcontroller and electronics have been designed to display concentrations in ppm on an LCD screen and provide a 1 second audio alert and danger signal if over OSHA standards. The system can measure CO2 within 5.7%, O2 within 4.6%, and CO within 1% of a commercial sensor. This project is 6 in x 3 in with plans to reduce to 1in x 1in.

Hale, Zachary

Institution: *WI - Carthage College*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Andrew Biertzer,
Zachary Hale,
Andrew Pustina

Abstract Name: **Competition Demands of NCAA Division III Women?s Collegiate Lacrosse**

In an effort to assess the demands of NCAA DIVISION III woman's collegiate lacrosse, Global Positioning Systems (GPS) were used to quantify positional demands during the 2022 College Conference of Illinois and Wisconsin season (NCAA Division III) for the Carthage College Women's Lacrosse team. GPS data was collected from twelve female athletes using a sampling rate of 10 Hz (Titan 2, Integrated Bionics Inc. Austin, Texas). When comparing total distance by position, a statistically significant difference was found between the midfielders and attackers (0.01; ES = 1.75, large) and between the midfielders and defenders (0.01; ES = 1.95, large). No differences were observed between attackers and defenders (p = 0.15; d = 0.34, small). The main finding was that midfielders covered significantly more total distance than both attackers and defenders. Calder et al. (2021) observed similar distances among female defenders (7517 ± 786 m), midfielders (6972 ± 770 m), and attackers (6806 ± 586 m) at the NCAA Division I level. Calder's findings were that defenders covered the most distance during competition; conversely, the midfielders covered the most distance in this study. These differences are likely due to the teams' style of play and talent level. Furthermore, all positions experienced a decline in total distance covered as the game progressed, consistent with other studies (Calder et al., 2021; Varley et al., 2014). These effects are likely due to fatigue, and by developing positional profiles of volumes throughout match-play, coaches can ensure their athletes are prepared for competition demands. It is suggested that coaches and practitioners ensure lacrosse players can handle distances of 6130-8110 m during match play; it is best achieved if players are trained by positional needs. This specific training may help reduce the progressive loss in total distance covered with each quarter played.

Hall, Abigail

Institution: *KS - University of Kansas*

Discipline: International Studies

Author/Contributors:
Abigail Hall

Abstract Name: **Dubai's Journey to Become the Fashion Mecca of the World: Arab Fashion Week and Saudi Arabia's Modesty Standards**

In an effort to establish Dubai as a fashion capital of the world alongside other haute couture powerhouses such as New York, Paris, and Milan, the Dubai Design District (D3) chose to host an annual Arab Fashion Week (AFW) beginning in 2015. This research will exploreif and how AFW designers reconcile with Saudi Arabia's enforcement of modesty standards for women's clothing before and after the codification of the Saudi Public Decency Regulations in 2019. I will conduct an exploration of designers' balance between preserving the artistic value of couture clothing design and respect for the Saudi Public Decency Regulationsto build upon existing scholarship on the impacts of Saudi Arabian politics on Saudi women's wardrobe freedoms. Through textual and observational analysis, I will assess the evolution of the AFW women's runway collections' in relation to theSaudi PDR. Textual analysis will be conducted with respect to the Public Decency Regulations and news articles, while observational analysis is conducted on images of women's spring and summer collections presented at AFW. The results are hypothesized to indicate designers' indifference to modesty standards implemented by the Saudi government. Amidst the backdrop of abundant scholarship on the relationship between gulf governments and women's rights, Saudi Arabia's Arab Fashion Week provides a peculiar case in which political beliefs and the desire to hold international attention engage on the battlefield of women's couture attire.

Hall, Julia

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Julia Marcelle W. Hall *Casie H. Morgan* *David C. Schwebel*

Abstract Name: **Gender as a Moderator for Creativity and Risk-taking among Preschoolers**

Creativity involves producing unconventional ideas and exploring uncertain situations, suggesting a potential connection with risk-taking behavior. Creative personality and ideation strongly predict adult risk-taking, especially in social and recreational domains, but little is known about whether the relationships extend to preschoolers. Boys tend to engage in more risk-taking than girls. However, the relationship between gender and creativity is less straightforward. For example, girls demonstrate more creative thinking and detailed verbal responses, but no gender differences for other forms of creativity. The current study investigated relations between imagination, risk-taking, and gender in preschool-aged children. As part of a larger study, 105 children ages 4-5 completed the Ability Test, a risk-taking task evaluating overestimation of personal abilities at two levels of difficulty: just beyond (8% above maximum ability; JB) and well beyond (13% above maximum ability; WB). Then, they completed the Thinking Creatively in Action and Movement (TCAM) to assess imagination. Parents also reported their child's risk-taking behavior using the Injury Behavior Checklist (IBC). Three regression analyses predicting performance on the two ability test levels and the IBC were conducted, with imagination as a predictor, gender as a moderator, and age as a covariate. Gender only significantly moderated the effect of imagination on the ability test tasks for the IBC. Simple slope analyses revealed that at high levels of imagination, boys were riskier than girls. Thus, high levels of creativity influence decision-making among preschoolers. Boys with higher levels of creativity may be more explorative and thus riskier. Comparatively, girls with higher levels of creativity may implement more creative thinking and problem-solving, which leads to less risk-taking. Previous research about socialization reveals that parents usually discipline sons for their reckless behavior and educate daughters for not thinking safely. The findings offer potential gender-appropriate interventions for dangerous risk-taking behavior.

Hall, Logan

Institution: *GA - Georgia College and State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Isabella Dattilio,
Logan Hall,
Haidee Martinez Perez,
Peter Rosado Flores

Abstract Name: **Synthesis of mesalamine and curcumin capped silver nanoparticles for the treatment of Irritable Bowel Disease (IBD)**

Silver nanoparticles are innovative materials which have found uses in the field of antiseptics and drug delivery systems as of late. The term IBD (Inflammatory Bowel Disease) is used to describe the series of chronic illnesses that are characterized by inflammation of the intestinal track lining. The two main diseases are Ulcerative Colitis (UC) and Crohns' disease (CD). One (UC) affects mainly the entirety of the colon while the other (CD) affects the entirety of the digestive system (from mouth to anus). To aid in the remission of an inflamed bowel, 5-ASAs (Mesalamine, balzalaside etc.) and curcumin are beneficial, alongside corticosteroids (prednisone) and biologics (Adalimumab and Infliximab). 5-ASAs (Mesalamine) are used to halt and avert flare-ups within the digestive tract while steroids and natural supplements such as curcumin, assist in the management of inflammatory and oxidative conditions. An effective synthesis of silver nanoparticles involves the use of silver nitrate, a capping agent (such as mercaptosuccinic acid) and a strong reducer (such as sodium borohydride). The two experiments were conducted while studying pH changes at each step. Then, UV-Vis was applied to verify the appearance of the nanoparticles. Signals around the 350-400 nm area confirmed the presence of silver nanoparticles in the two experiments. This work explores conditions that are used to synthesize these nanoparticles, that could be beneficial someday, in the delivery of therapeutic agents straight to intestinal lesions in the colon or digestive track.

Hall, Robert

Institution: *WI - University of Wisconsin-Madison*

Discipline: History

Author/Contributors:
Robert Hall

Abstract Name: **Herman Goldstein's Wisconsin Idea: How Public Universities Contributed to Mass Incarceration**

In the late 20th century, digital technologies contributed to the United States' expanding carceral state. Police departments embraced computer programs to guide predictive policing, and digital databases published collated criminal data for all to see. These programs resulted in racial profiling, the criminalization of the poor, and creation of the planet's largest prison system. These systems also "outsourced" carceral activity to the civilian community as employers, schools, and the public used readily available records to discriminate—and thus to perpetuate the delinquent class. While scholars have written about these technologies in terms of privacy versus surveillance, asymmetrical power relations, and race-class intersections, few have explored the ways in which social scientists enabled their rapid growth. This project examines scholars who aided the policing process and ensuing technologies. Key among them was Herman Goldstein, UW-Madison legal scholar. He believed police could more efficiently control crime by proactively accumulating, sorting, and extracting criminal incident data for later analysis and public dissemination. While Goldstein and the scholars he influenced claimed they were "democratizing" policework and promoting "community policing," I show that the ways in which they encouraged the outsourcing of policing to the public and the vertical integration of ordinary people into the digital carceral system. Through the interplay of intellectuals at public institutions who lent legitimacy to carceral efforts which burdened the very society they were supposed to serve, I illuminate inconsistent aims which strove to implement academic ideas beyond the boundaries of the Wisconsin classroom.

Hall, Tanner

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Rakib Islam

Abstract Name: **On the Effectiveness of Augmented Data Generation of Brain Tumors Using GAN based Techniques**

Deep learning models have shown promising results in the computer-assisted diagnosis of brain tumors from images. The training data should be sufficient with high quality and generalized characteristics to train the deep learning models accurately. However, in the medical domain, the training data is limited, as it is difficult to collect sufficient patient data because of the problem of patient recruitment, the burden of annotation of lesions by experts, and the invasion of patients' privacy.Researchers have developed different automated Data Augmentation (DA) techniques, such as scaling, cropping, flipping, and Affine transformation, to overcome the problem of limited data for training. Recently, Generative Adversarial Network (GAN) based DA techniques, such as TumorGAN, PCCGANs, and CPGGANs, have shown improved results in generating augmented data. However, the evaluations of the existing GAN-based DA techniques can be questioned as the experiments were conducted either on small-sized datasets or included only some of the available datasets. In this study, we conduct a rigorous investigation to determine the effectiveness of the GAN-based DA techniques by applying those in all the available Magnetic resonance imaging (MRI) datasets.

Hallett, Jacob

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Jyl Kelley

Abstract Name: Waveform Play Space

One major purpose of this group is to form a collaboration between Music and Visual Arts at UWEC. A group of 4 students from Music, Photography, Graphic Communications, Illustration, Painting and Drawing will work with faculty mentors over the summer to translate sounds from nature that create interesting visual patterns in real time. The vibratons from those sounds will be the basis for developing an interactive installation envirment between Visual Arts and Music; Theater Arts. The resulting installation will be displayed publicly in the Haas Fine Arts Center Lobby in October 2022. This student/faculty team will work for approximately 10 hours per week during the summer and early fall to complete the project. Faculty includes Professor Jyl Kelley from Art; Design, Professor Gary Don from Music Theory, and Assistant Professor Mykola Haleta

Halstead, Luke

Institution: ***MN - Minnesota State University - Mankato***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Harrison Ellis,
Luke Halstead

Abstract Name: Quantifying Benefits of Bridge Maintenance, Research Project for Minnesota Department of Transportation

The objectives of this research are to quantify the benefits of preventive maintenance on Minnesota pavements and to develop decision trees that will guide the maintenance decisions for Minnesota roads. A literature review was conducted to observe trends of preventive maintenance effectiveness and challenges that are reported by other State Departments of Transportation. From this review, the findings were broken up into two data sets, one for roughness and one for distresses. Quantitative values of improved condition or decelerated deterioration for Minnesota roads in relation to actual project history will be analyzed along with the project costs for both data sets. The relationship between actual projects and the resulting performance will provide an understanding of the effectiveness of current decision guidelines and in what ways the process can be improved by increasing the timeliness of preventive maintenance measures to manage pavement service lives more cost effectively. Quantifying preventive maintenance will guide the development of a set of decision trees to advise project selection based on life cycle cost. These decision trees will help to enhance the selection of projects to lengthen the lifespan of the pavement. With limited budgets for transportation infrastructure, it is essential to improve asset management practices for our roadways.

Hamele, Rachel

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Rachel Hamele

Abstract Name: **Autism Abroad: Barriers to Collegiate International Education for Students with Disabilities and Implementation of Universal Design for Learning**

This project aims to address barriers to studying abroad in higher education for students with disabilities and explore how “Universal Design for Learning” (UDL) could be implemented to create more equitable experiences for students with ADA accommodations in international education. I draw on my own experience with a short-term immersion program as a case study to highlight issues of inclusion and equity in study abroad and suggest ways that universities, international educators, and future participants can re-envision study abroad and produce more equitable international learning communities. One framework that is often used to foster student growth in a learning environment is UDL, which provides students with equal opportunities to succeed, which can include health services. International travel takes a toll on individuals that can manifest in physical or mental illness and increases the need to supply support, resources, and mentoring to students studying abroad. The unique challenges students with disabilities experience from higher rates of social exclusion, mental illness, and other obstacles emphasize the need for this support. Educators need to think intentionally about ways to address these issues, support all students, and create resources and support systems that allow for more equitable learning communities. The experience I had abroad affirms this belief as shown through developing a psychosomatic illness due to the increased stress that was, in part, due to social exclusion and barriers only I experienced due to my disability status.Universal Design for Learning is used to create equitable learning experiences for all students based on engagement, representation, action, and expression. Reflecting on my experiences abroad, this presentation will analyze obstacles to international education for students with disabilities and apply them to the principles of UDL for educators to use when creating accessible international experiences in higher education.

Hamilton, Kathryn

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Kathryn Hamilton,
Tomiyah Alcantar,
Emily Martin

Abstract Name: **Male Participation in Parent Education**

The student researchers seek to create an environment that motivates fathersto attendparent education courses by exploring the factors involved in the participation of males in parent education. The student researchers targeted a sample size of 78 fathers while utilizing a mixed methodology survey with an emphasis on quantitative. The students distributed this survey through online platforms and local grocery stores. The student researchers collected data during a three-week-long period. The survey contained five demographic questions regarding age, race/ethnicity, marital status, number of female children, and number of male children. The majority of respondents were ages 41 to 50, (28.2%; n=22), 20.5% (n=16) were ages 31 to 40, 16.7% (n=13) were ages 20 to 30, 12.8% (n=10) were ages 51 to 60, 10.3% (n=8) were ages 61 to 70, 7.7% (n=6) were ages 71 to 80, and 2.6% (n=2) were 81 to 90 years of age. Regarding race/ethnicity 85.4% (n=51) of respondents were White/Caucasian, 28.2% (n=22) were Hispanic, 2.6% (n=2) were American Indian/Alaskan Native, 2.6% (n=2) were Black/African American, and 1.3% (n=1) were Asian/Pacific Islander.The student researchers created a code sheet using Google sheets, which consisted of converting the survey questions into a code. The student researchers used the Statistical Package for Social Sciences (SPSS) to analyze data collected. The student researchers utilized the Hahn’s Coding Process to analyze the qualitative data. The themes: Work, Family, Time, and Disability consist of responses that reveal obstacles within the father'slives that would interfere with their attendance toparent education classes. Conducting this research provides information to include programs specifically for males to become more involved in parent education.By gaining insight from fathers in the community, the researchers will brainstorm ideas on how to make it easier for fathers to be able to attend parent education classes.

Hamilton, Marissa

Institution: ***TN - Trevecca Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Marissa Hamilton,
Karris Anastasio

Abstract Name: Relationships Between Insomnia, Stress, and Perceived Daytime Impairment

The life of a college student is one filled with assignments, tests, work, and a social life squeezed in. During this time, sleep is often neglected as a necessity or even unattainable for some students. Students do not realize how much of an effect sleep can have on their perceived daytime impairment. Stress also seems to have a large correlation with recurring lack of sleep. After completing literary research, a variety of hypotheses concerning insomnia and other sleep issues, stress, and perceived daytime impairment were made. It is hypothesized that insomnia scores will be positively correlated with stress scores; that perceived daytime impairment scores will be positively correlated with stress scores; and that insomnia scores will be positively correlated with perceived daytime impairment scores. One hundred and seven undergraduate students at a small, private university in the southeast participated in a survey to study the correlation between these three variables. The following instruments were administered: Bergen Insomnia Scale, Sleep Related Impairment Measure, and the College Student Stress Scale. It was determined that all three hypotheses were supported with significant moderate, positive correlations. These findings were consistent with existing literature. Recommendations, implications, and limitations will be presented.

Hammer, Kohl

Institution: ***SC - The Citadel***

Discipline: Physics/Astronomy

Author/Contributors:
Jesse Quimby,
Kohl Hammer

Abstract Name: Impact force due to a projectile passing through vibrating liquids

This experiment will analyze the effect vibrations have on an impact force of a spherical projectile passing through a liquid. The spherical projectile was dropped through water, olive oil, and linseed oil twice: once while the medium was vibrating, and once while it was not. The impact force is experimentally collected by a force sensor. The two impact forces with and without vibrations were analyzed to determine the effect of the vibrations on the projectile and the medium. The average force as the projectile passes through air was experimentally collected as 40.0±1N as the projectile passes through air and 13.8±1N as the projectile passes through water. The equations used to predict the impact force analyze the momentum at the time of impact, which relies on the viscosity of the liquid, the mass, and the radius of the projectile.

Hammer, Matt

Institution: *GA - Kennesaw State University*

Discipline: **Business**

Author/Contributors:
Matt Hammer *Ben Buxton* *Lauren Pederson,*
Juan Gonzalez *Celina Duong*

Abstract Name: **Why are Restaurant Firms are Going Private? Going Private Transactions and Stock Returns of Restaurant Firms**

Access to capital markets is one of the key benefits of becoming a publicly traded company. However, previous research has shown that companies in more recent years have returned to the private sector rather than staying public after the initial public offering. While existing research found numerous reasons for going private, there is a limited number of studies that identify factors that influence the shareholder returns of the decision to go private. This study attempts to uncover external and internal factors that affect shareholder returns. Our study includes U.S. restaurant companies listed under Standard Industry Codes 5810 and 5812 between 1995 and 2021. Our initial sample consisted of 80 firms that had a delisting code 231. Because some of these delistings were for firms that went bankrupt, the final working sample includes 74 firms. Data on going private transactions will be obtained from media outlets and SEC annual filings (10-Ks). Data for the dependent variable (shareholder stock returns) is available in The Center for Research in Security Prices (CRSP). Potential independent variables in our study are firm size, level of undervaluation, governance issues, executive team structure, board composition, etc. Regression analysis will be used to explain the variance in shareholder returns. This study expects that board composition and the executive management structure, will emerge as important factors beyond traditional variables such as firm size as determinants of shareholder stock returns. The findings of this research study can provide important implications for firm executives who are considering going private and private equity investors who are trying to identify the best target firms that can be taken private.

Hamous, Juniper

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Juniper Hamous

Abstract Name: **DJS Honors in the Major: DEI Throughout 1980s to 2000s**

Due to their experience with DEI (diversity, equity, and inclusivity) practices at the University of Wisconsin-Green Bay, the author wanted to lead a critical discussion on civil rights and liberties, as well as historical movements, for the LGBTQIA2S+, POC, and disabled/differently abled communities. The research presented in this presentation relates to the 1980s to 2000s era cultural shift, a shift from Stonewall and the Disability March to EDI involvement in multiple fields and industries.This project will showcase the voices and stories of those within these communities, highlighting the significance of Wisconsin in EDI history. Using archives from UWGB's Native American history and other archives, the author hopes to inspire further discussions and debates surrounding the LGBTQIA+, Indigenous, Black, People-of-Color, and disabled/differently-abled communities, as well as the work that the Diversity, Equity, and Inclusivity field has done to protect these communities' rights. Historical context is crucial to today's modern society and how every individual views these communities today.This poster will highlight an overview of several crucial events that led to the 1980s movements in Wisconsin leading up to the move for implementing EDI practices in Wisconsin. Including the overturning of Indigenous Boarding Schools, responses to the Vietnam War, the responses to Stonewall, and the implementation of drag and gay bar culture in our wonderful home state! Special thanks to the Archives, the Democracy and Justice Studies department, and all EDI offices at the University for their support in this rigorous study.

Hampton, Sarah

Institution: *GA - Kennesaw State University*

Discipline: Education

Author/Contributors:
Chinasa Elue *Cristen Canavino* *Christopher Gardner,*
Sarah Hampton *DeCarlos Mckinney* *Zoe Brown*

Abstract Name: **Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the Experiences of First-Year College Students**

Student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years. The offset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before. Of growing concern is the rising mental health crisis that is sweeping through higher education which warrants an immediate and intentional response. Further, students are currently facing dire financial constraints, food and housing insecurities, and many other challenges that complicate their college experiences. As freshman students are now experiencing college for the first time, their experiences may vary drastically from their predecessors. Specifically, current first-year students' college transitions are muddied from their various high school experiences that may have been a remote, hybrid, or in-person with some variation of security measures. Further, the grief, loss, and trauma first-year college students have experienced during the pandemic warrant special attention as we are contending with the types of resources and support, they need to matriculate and complete their degrees. The remnants of grief and trauma from the pandemic still linger and are impacting the college experiences of first-year students and their abilities to navigate their academic and professional goals. Hence, through a qualitative research design, our research explores the lived experiences of first-year college students. Specifically, the research question explored in our study is: How or to what extent has grief and trauma from COVID impacted the educational journeys of first-year students? The aim of this research is to provide an important opportunity to investigate how to better support college students as they move through collegiate experiences.

Han, Daniel

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Chemistry/Materials Science

Author/Contributors:
Dongwoo Han,
Sanghee Yang

Abstract Name: **The effect of block length on polybutadiene-b-poly(ethylene oxide) micelle fragmentation kinetics in ionic liquid**

Recently, the equilibration of micelles formed by diblock copolymers has been highlighted due to their applications in various fields; yet, their fragmentation processes are poorly understood. Previous work on the fragmentation kinetics of 1,2-polybutadiene-b-poly(ethylene oxide) (BO), demonstrated that the fragmentation time varies with the total degree of polymerization (Ntotal) as tfrag ~ Ntotal9/5, which is consistent with the theoretical prediction of Dormidontova, even though that was couched in terms of Ncorona. To clearly resolve the contributions of Ncorona and Ncore to the N dependence, each block length needs to be modified separately. In this study, a series of BO diblocks with fixed NPB (9, 14 kDa) and various NPEO from 6 kDa to 20 kDa, was prepared to examine the corona length effect, and another with nearly constant NPEO (9, 13 kDa) and various NPB from 9 kDa to 14 kDa was prepared to study the core length effect. Micelles are formed by direct dissolution of the BO diblocks in 1-ethyl-3-methylimidazolium bis-(trifluoromethylsulfonyl) imide ([C2MIM][TFSI]). The sizes decrease when annealed subsequently at a high temperature (170 ℃). Comparing the fragmentation rates of the series of micelles will establish the individual effects of N-corona and Ncore. The hydrodynamic radius (Rh) of the micelles will be measured utilizing dynamic light scattering. The Rcore changes will be determined by small-angle X-ray scattering and transmission electron microscopy. We hope to establish the significant determining factors for both Ncore and Ncorona regarding micelle fragmentation kinetics.

Han, Ethan

Institution: ***DC - American University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Ethan Han,
Catherine Hou,
Arthur Shapiro

Abstract Name: Illusions of Space and Motion: The Impact of M?ller-Lyer Lines on Perceived Speed

Motion illusions illustrate the separation between physical reality and perception: physically, motion is the change in location over time; perceptually, however, it is possible for objects to appear to move, but remain in the same physical location (Flynn; Shapiro, 2018). Our perception of motion, therefore, corresponds to the brain's interpretation of the external world rather than directly reflecting reality (though, in most occasions, the brain's constructions correspond to the physical world). Here we are concerned with the properties of the cognitive system that signal motion. In particular, we investigate how perceptions of speed are affected by changes in the perceived distance that an object travels. In physics, speed is a change in distance divided by a change in time; but many illusions can change the perceived length of a line (for instance, the Oppel-Müller-Lyer illusion). Hence an object traveling along the line would travel the same physical distance but a different perceived distance. In a version of the Oppel-Müller-Lyer developed by Todorovic (2017), segments of a circle equal in length appear unequal due to the addition of outward and inward-facing auxiliary lines. We coded a dot that travels around the Todorovic circle and measured changes in perceived speed as a function of the angle of the auxiliary lines. Participants will be asked to adjust the speed of the dot in the "shorter" segments to match the speed of the dot in the "longer" segments. We hypothesize that if perceived distance affects perceived motion, participants will see the dot moving faster when it passes through the "shorter" segments of the circle than when it passes through the "longer" segments. Experiments are ongoing, but interaction with a demonstration program (an illusion) that shares the experiment's configuration suggests strong individual differences as to whether the auxiliary lines affect perceived speed.

Han, Woongseok

Institution: ***VA - Virginia Tech***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Woongseok Han

Abstract Name: In House Development of the Foot Platform for Body Scale Haptic Interface, ForceBot

The work presents a design, analysis, and build of an ergonomic foot platform for a body-scale haptic interface called ForceBot. The ForceBot is a robotic haptic interface that embodies human-pilot into virtual reality (VR), which enables physical interaction between the user and the simulated world. The human pilot is connected to the robotic platform with the feet mounted on a gait simulator that consists of two planar gantries and two foot platforms. To render realistic sensational feedback, the physical human-robot interface (pHRI) in the system, such as the foot platform, must provide adequate range of motion and degree-of-freedom that corresponds to the human input motions. pHRI must be carefully analyzed ensuring user safety while inherent ergonomic design that suits the operator. The design of the platform has considered application of load and stress concentration and was validated through performing Finite Element Analysis (FEA) and Destructive Tensile Test. The rotation control of the platform was initially an interrupt-based electromagnet control which is being developed into an actuated version to ensure precise control of the angle. Foot platform, as an end effector, enables application of position and force feedback to the user through pHRI according to the interaction in VR. This body-scale haptic interface elevates the fidelity of VR sensational feedback, which aims to be a dynamic scenario generator to assist a broad group of society. ForceBot aims to be a versatile experimental platform for industries as well as for the researchers to conduct study and experiment before the technology is deployed into the real world.

Hanak, Bethany

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Nicholas Biehn,
Bethany Hanak,
Samantha Reeder

Abstract Name: **The effects of arbuscular mycorrhizal fungi on plant defense in Nicotiana rustica in response to simulated herbivory**

Plants have evolved various techniques by which they protect themselves from herbivore damage. In developing these defense mechanisms, plants allocate resources away from growth to increase chances of survival. In effort to compensate for this distribution of resources, studies have shown that plants can enlist the help of arbuscular mycorrhizal fungi (AMF), a mutualist that penetrates roots and exchanges in organic nutrients for sugars. Prior research has indicated that under certain conditions both growth and defense increase inAMF-inoculated plants.Nicotiana rustica is one species that is associated with AMF. This tobacco species possesses both physical and chemical defenses, primarily in the form of trichomes and the alkaloid, nicotine. Through inoculation of this tobacco with AMF, we can investigate the mutualists effect on growth and defense mechanisms. In this greenhouse experiment, we will be looking at the effects of inoculation timing coupled with simulated physical herbivory. Plant mass measurements will betaken72 hours post herbivory. Nicotine levels and trichome density will be analyzed on select leaves of each treatment group. Based on previous research, we expect to see increased defense in all herbivore damaged plants as well as heightened growth in all AMF inoculated plants. Higher levels of defense will be shown in all damaged inoculated plants, with the greatest levels seen in plants inoculated post germination.

Hand, Madison

Institution: *CO - Regis University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Madison Hand,
Kelly Parker,
Rebecca Betjemann

Abstract Name: **RU a Twin? Correlations between the Big 5 Personality dimensions and Altruism Levels in Twins**

Altruism is typically a desirable and virtuous trait because it is considered favorable to care for the welfare and suffering of others (Kaufman, 2020). Studies have been conducted investigating the environmental and genetic structure of altruism, and most of these studies use a self-report altruism scale (Ando, 2021). Ando found that 51% of altruism is explained through genetic effects without shared environmental effects (Ando, 2021). They found personality profiles such as neuroticism, extraversion, openness to experience, and conscientiousness create different types of altruistic personalities (Ando, 2021). Other studies looked at pathological altruism (PA) and healthy selfishness (HS) (Kaufman, 2020). Results showed a relation between HS and psychological well-being (Kaufman, 2020). Pathological altruism was associated with vulnerable narcissism, maladaptive psychological outcomes, and the Big 5 personality traits (Kaufman, 2020). This current study aims to investigate the correlations between the Big 5 personality dimensions and altruism levels. Specifically in this study data collection is ongoing but we have collected data from 129 participants thus far. Each participant answers 20 questions about the five personality dimensions (Benet-Martinez; John, 1998; John et al., 2008; John et al., 2011), and 12 questions about altruism (Friedland el al 2020).We would like to collect enough data about altruism traits and personality constructs in twins so that we can analyze them in a behavioral genetics format. More interestingly we will be able to look at the possible overlap in genetic influence across these different factors. This can inform us about possible common cognitive and brain processing underlying the different factors.This part would be our next steps after this study is executed smoothly.

Haney, Laura

Institution: *PA - Allegheny College*

Discipline: **Biology**

Author/Contributors:
Laura Haney

Abstract Name: **Effects of Phenolics and Antioxidants Four Types of Legumes on Callosobruchus maculatus**

Callosobruchus maculatus are infamous grain store pests that choose specific beans for oviposition (egg laying) and have different outcomes on different bean types. It is also known that black-eyed peas with higher metabolites, such as phenols, are more resistant to C. maculatus. There is a gap in knowledge regarding how the antioxidant and phenolic compounds relate to life history factors across bean species. To test these biological outcomes, four bean types: black-eyed pea, yard-long bean, chickpea, and mung bean, were evaluated separately on the initial fecundity and offspring outcomes. Two male and two female adults were put in four cups with 7 g of separate bean type and the offspring resulting from these cups were counted, sexed, and removed 2 days after eclosion to allow for mating times. Oviposition was monitored on one gram of the same bean type for females and lifespan was monitored for both sexes. Using the DPPH free radical scavenging assay, the antioxidant content is calculated in L-ascorbic acid equivalence. Total phenolic compound concentration is determined through the Folin–Ciocâlteu reagent and absorbances are relatively compared.

There is a significant difference in offspring amounts between black-eyed pea hosts and mung bean hosts (p=0.0002) which is not clearly explained by the antioxidant results which indicated yard-long beans have the highest concentration. Yard-long bean offspring amount and outcome did not have any significant differences from that of black-eyed peas. The total phenolics in chickpeas were much lower than that of the other 3 bean types and which explained the high amount of oviposition on the chickpeas compared to black-eyed peas (p=0.0002). It can be concluded that phenols may act as a defense mechanism in many beans because when there are fewer phenols present, C. maculatus have a higher incidence of oviposition.

Hanle, Jackson

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Physics/Astronomy**

Author/Contributors:
Jackson Hanle,
Mary Ellen Zvanut,
Subash Paudel

Abstract Name: **Mechanism of Conductivity of AlGaN Semiconductors Determined from EPR Spectra**

AlxGa1-xN is an ultrawide band gap (5-6 eV) semiconductor with applications in deep UV LEDs and high-power electronics. In order to enable function and improve performance, UV LEDs need a highly conducting layer which can be achieved with heavily Si-doped AlxGa1-xN. The purpose of this research is to develop an understanding of the mechanism for conductivity in AlxGa1-xN, x > 0.6, by using Electron Paramagnetic Resonance (EPR) spectroscopy. To achieve this, the line width of the EPR spectra and the electron spin densities were measured in doped AlxGa1-xN, with Si concentrations between 1018-1020 cm-3.

In AlxGa1-xN:Si, Si acts as a shallow, neutral donor with an EPR g value of about 1.98. The temperature dependence of the donor EPR line width and concentration indicate band formation at lower temperatures (< 40 K) as well as the existence of the structurally relaxed, EPR silent, negative charge state of the donor at higher Al concentrations. In the talk, the analysis of the temperature dependence leading to impurity band formation, as well as the role of EPR in the measurements made will be discussed. This work was supported by ULTRA, an EFRC funded by DOE-BES, Award No. DE-SC0021230.

Hannadige, Dulani

Institution: *KS - University of Kansas*

Discipline: **International Studies**

Author/Contributors:
Dulani Hannadige

Abstract Name: **Conflict-Affected Women's Socioeconomic Roles in Post-War Sri Lanka**

Women's post-conflict experiences are under recognized in mainstream discussion of post-conflict reconciliation and socioeconomic policy. This research project will examine how conflict-affected women's socioeconomic roles have changed in post-conflict Sri Lanka. While existing literature has investigated how women's domestic and public roles shift in response to socioeconomic changes in post-conflict settings, this research will examine this issue at a micro level by analyzing women's accounts of how their lives have changed in post-war Sri Lanka. As scholars have utilized a feminist perspective in research to demonstrate the gendered impact of conflict on opportunities for women, this research will apply feminist theory in analysis. I will use interview data from the book We Are Present, an archival project on the Sri Lankan Civil War and affected women's post-conflict experiences. This research project will employ content analysis to thematically code the narratives and identify recurrent themes and patterns arising from the women's perspectives. The results will likely demonstrate post-conflict socioeconomic opportunities changing women's domestic and public roles in Sri Lanka. Post-conflict reconciliation and policy should consider women's gendered experiences to adequately target the intended population.

Hannon, Sarah

Institution: *IA - Iowa State University*

Discipline: **Political Science**

Author/Contributors:
Kathryn Burns,
Sarah Hannon

Abstract Name: **That's like the inherent sexism that we all deal with: Women's experiences running for office**

This research examines the differences women and men face when they enter the political field. Special emphasis was placed on women's experiences with sexism as they decide to run for office and throughout the election cycle. Previous studies indicate that women in politics perceive their qualifications to be less than those of their male counterparts, and men were more likely to say they were very qualified (Fox; Lawless, 2004). Previous research also showed that women were more likely to experience imposter syndrome than their male counterparts (Weir, 2013), and indicate that women feel less comfortable than men when doing political activities like door-knocking and fundraising (Fox; Lawless, 2012). This mixed-method study adds to previous research by analyzing how political communication affects cultural perceptions and how these perceptions affect the experiences of women who run for office. We collected data through surveys of both men and women who held office in Iowa, interviews with women with past or current political experience in Iowa, and conducted a content analysis of political advertisements. Our results offer updated insights that show an improvement in women's self-perception of their qualifications and give insights about how the imposter syndrome in the political pipeline shifts as women are encouraged to run by those who are already in political office. We also share new insights on how the sexism women experience regularly prepares them to overcome this barrier on the campaign trail.

Hansen, Anna

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Mathematics

Author/Contributors:
Audrey Williams,
Anna Hansen

Abstract Name: Using Mathematical Modeling to Increase Crop per Drop

Chippewa Valley Bean (CVB), located in Menomonie, Wisconsin is the world's largest producer of dark red kidney beans. There is limited research available on dark red kidney beans as they account for less than 1 % of the nation's agricultural land use. CVB agronomists asked, "How much water is required to grow one hundred pounds of dark red kidney beans?" There are many factors that impact the answer to this question. This project focuses on soil characteristics while holding temperature and nutrients fixed. Plant disease and weather-related damage is also neglected. A mathematical model consisting of a system of three coupled differential equations was developed to simulate water use through the soil, plant canopy, and reproductive biomass. The model predicts a kidney bean plant's reproductive biomass at the end of the growing season. Numerical experiments show how much water is needed via daily irrigation to achieve maximum yield for given soil characteristics. The intended use of this model is to help agronomists advise growers on the efficient use of water resources to obtain maximum kidney bean yields.

Hansen, Kaia

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Kaia Hansen *Nichol He* *Nijhum Paul*
Aaron Huber *Paige Keller* *Jerome Louis*
Rahul Gomes

Abstract Name: Using Deep Learning for Analysis of Methylation Markers Associated with Pancreatic Cancer

DNA methylation is a key epigenetic modification that can modulate gene expression to influence cell differentiation. This process could impact the role of a tumor suppressor gene which possibly lead to cancer. DNA methylation can be measured at single-cell resolution by high-throughput sequencing technology. However, these technologies cannot determine complete CpG coverage and hence prediction of missing methylation states are critical for complete genome-wide analysis. The main challenge for prediction is the high dimensionality and complexity of the methylation data. To address this dimensionality, we propose a two-step method of feature selection and cancer prediction using state-of-the-art machine learning algorithms. In the first stage, Principal Component Analysis, Random Forest, and ANOVA F-test are applied to select the top CpG markers that could be the most important features in this research. The degree of similarity between selected CpG markers would also be analyzed using Correlated Feature Elimination and some of the highly correlated features would be documented and removed prior to classification. Selected features can then be combined with RNA-sequencing data to provide a comprehensive dataset that serves as the basis of prediction. A Convolutional Neural Network would be implemented to develop a diagnostic prediction model for cancer detection from the selected CpG markers and associated RNA sequencing data. Experiments will be conducted on pancreatic cancer-specific CpGs using the publicly available Cancer Genome Atlas Program (TCGA) datasets. Our proposed approach consisting of a Feature Selection stage would make this model scalable and faster while Deep Learning would develop an accurate prediction model capable of expressing non-linear relationships.

Hansen, Mei Ling

Institution: *WI - Alverno College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Mei Ling Hansen

Abstract Name: **A look into the mind: How the type of mindset affects self-esteem**

The mind is a powerful thing that can influence one's self-perception. Many times, it can affect how we feel about ourselves. Because of this, one might conclude that manipulating one's mindset would influence feelings of self-esteem. Understanding the process of social comparison through mindset can give researchers a better understanding of how these two interact and affect self-esteem.Mindset includes the mental attitudes or beliefs one holds. Research shows that there are two different types of mindsets: a fixed mindset and a growth mindset. Having a fixed mindset would cause one to think that a certain ability or trait can not be changed, whereas a growth mindset would cause one to believe that improvement is possible. One might expect that the harder a task or ability becomes, the lower their self-esteem may beif the task seems "impossible." The purpose of the current study was to investigate whether the manipulation of mindset affects one's self-esteem. Unfortunately, not many studies have been done to investigate this association. A total of 32 Alverno students were recruited to participate in a Qualtrics study. The State Self-Esteem Scale was used and modified for the purpose of this study. The results showed that there is no significance between mindset and self-esteem, which was inconsistent with the hypothesis. This may be because a fixed mindset leads participants to feel more confident and have higher self-esteem about their abilities when they must overcome a difficult obstacle.

Hanson, Anaka

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Kelli Kjornes,
Anaka Hanson

Abstract Name: **The Effect of an IPE Simulation on the Self-Efficacy and Knowledge of PT, OT, and SLP Students**

The implementation of interprofessional education (IPE) for students is an important learning opportunity where they can gain skills that will help facilitate successful collaborations with various professionals in their future careers. Measurement and documentation of student learning is critical to justify ongoing implementation of these IPE experiences. Most tools that are used to assess student learning about IPEand interprofessional practices (IPP) are self-efficacy scales that measure students' own perceptions. Measurement of change in student knowledge associated with IPE is rarely reported in the literature but would lend more support to the value of IPE. The purpose of this study is to determine how students' self-efficacy compares to their actual knowledge before and after participating in an IPE simulation. Speech language pathology (SLP), occupational therapy (OT), and physical therapy (PT) students willwork in interdisciplinary groups to complete a co-evaluation of a simulated stroke patient, with opportunities for discussion and feedback during the process. The students will complete the Interprofessional Collaborative Competency Attainment Scale (ICCAS) and answer knowledge-based questions before and after the simulation in a Qualtrics survey. Student self-efficacy and knowledge-based scores will be reported as quantitative data. Students will also complete a reflection on the event, providing qualitative data about their learning and growth. The results of this study will help determine whether this type of IPE simulation is effective in increasing students' knowledge about working in interprofessional teams.

Hanson, Jesse

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Music

Author/Contributors:
Chloe Carrillo,
Paterjah Lee,
Jesse Hanson,
Havilah Vang

Abstract Name: Borodin String Quartet No. 2

Borodin's Second String Quartet in D Major is a piece that requires advanced ensemble techniques, fine intonation work, and balanced melodies. It is an essential quartet piece within the string repertoire, and one which our group has grown from immensely while preparing.
The passing of melodies from cello to first violin and viola to second violin requires eye contact, breathing, and togetherness as a group. Borodin includes immediate tempo changes marked at the two animatos, as well as poco a poco dim. e rit at the end of the piece.
Beginning in the deceptively easy key of D Major, intonation inaccuracies are not easily hidden in this piece. Several moments require the performers to play in unison or octaves, and every chord must be carefully tuned. Compounding this, the piece changes keys several times during its development. The F#s in these keys are naturally dissonant and difficult to tune, especially in a group setting. Our quartet has spent hours together refining our intonation.
Throughout the piece, the first violin and cello converse with each other by trading the main melody. Later in the development section, the melody is passed around to the rest of the quartet. At the recapitulation, the cello hands the melody to the viola, requiring a strong sense of balance among the group. Because of this, our quartet has been working on balancing the melody and the accompaniment. The passing melodies require each member to use the same bow techniques and distribution, keeping everything uniform and beautifully phrased.
An influential work for any group, Borodin's second string quartet blends beautiful melodies and textures with flawless technique to create a timeless masterpiece.

Hanson, Natalie

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Alyssa Horton *Thomas Atwood* *Natalie Hanson*
Katelyn Moyer *Nicholas Beltz* *Saori Braun*
Jeffrey Janot

Abstract Name: The Cardiorespiratory Response while Nordic Walking vs. Regular Walking Among Middle-Aged to Older Adults

Background/Purpose: Around 60-80% of waking hours for adults are spent in sedentary behavior while physical inactivity accounts for 9% of all deaths worldwide. Furthermore, there is a strong dose-response relationship between physical inactivity and all-cause mortality, cardiovascular health, and metabolic health. Recently, Nordic walking (NW) has been introduced as a superior mode of exercise where one can increase energy expenditure due to increased engagement of upper body musculature while walking at a moderate intensity pace. NW is like regular walking except for using walking poles. Within established findings, most work has been done in a laboratory which can interrupt natural NW mechanics. Therefore, the purpose of this study was to measure the cardiorespiratory and energy expenditure differences in Nordic walking and regular walking in a field setting. Methods: Twenty middle-aged and older adults participated in this study. Each participant's initial session included Nordic walking familiarization, 10-m gait speed test, and a peak oxygen uptake (VO2peak) test. The two exercise sessions consisted of either NW or regular walking on an indoor track for 30 minutes. All metabolic variables were measured via the COSMED K5. Results: A paired-sample t-test revealed a significant difference between NW and regular walking for %VO2peak values ($p = .008$), kcal·min-1 ($p = .005$), and total kcal expenditure ($p = .001$). No significant difference was found for preferred gait speed ($p = .485$) between NW and regular walking. Conclusion: NW is superior to regular walking in eliciting a higher %VO2peak despite similar walking speeds, a higher kcal·min-1, and greater total kcal expenditure. In turn, these data agree with previous research and supports the use of NW to increase energy expenditure to potentially prevent the risk of one's metabolic and cardiovascular risk.

Hara, Kyosuke

Institution: *NE - University of Nebraska at Kearney*

Discipline: Economics

Author/Contributors:
Kyosuke Hara

Abstract Name: Economic Impacts of Russia-Ukraine War

The Russian-Ukrainian war began in February 2022. The war not only resulted in thousands of deaths, but also brought an agricultural crisis to the world. Wheat is Ukraine's second major agricultural product and accounts for approximately 28% of Ukraine's food supply. Based on data collected from various sources, including the U.S. Department of Agriculture, this study examined trends in Ukraine's production and exports and found that both production and exports were declining in 2022 due to the ongoing war. Compared to 2021, wheat production is down about 30% and exports are down about 48%. The study also found that the war is having a negative impact on the global economy by affecting energy and food prices, causing significant inflation. And its impact on developing countries is greater than its impact on developed countries. This is because developing countries are at a disadvantage in terms of trade compared to developed countries. This study reports on modern warfare and its impact on food supplies and economies, starting with the impact of the Russo-Ukrainian war on the world economy. Not only this war, but also other conflicts are taking place around the world, both within and between countries. The effects are not confined to a single country but affect many countries. Focusing on developing countries, the report examines the impact from major grain producing and importing countries. The study will also examine the likelihood of conflict in those countries and how war is a threat to the world based on the country's food supply.

Harder, Halee

Institution: *OK - University of Central Oklahoma*

Discipline: Theatre and Dance

Author/Contributors:
Halee Harder

Abstract Name: Visualizations

Visual art and dance created by emerging artists, is something that is not really explored. A lot of choreographers use famous paintings to create a piece of work. However, by allowing visual artists that are emerging to create work and then create something from that work, is allowing for an exploration into the unknown. There is so much potential that could be done with collaborating with emerging artists and dancers, but there is never really any known knowledge to create that bridge with the two. This piece of work is created to show that art does not have to be created in a vacuum. That instead it can be created by many different artists that are starting to make their way or finding their way. There is a sense that if visual art is going to be portrayed through dance, then it needs to be a famous painting. However, this piece was created to show that dance can still portray visual art through artists that are up and coming. By creating a piece of work that is inspired by emerging visual artists, my end goal is to show that even if you don’t have a prominent name in the art world, you can still create something that is beautiful by collaborating with other emerging artists. This piece was created to inspire people to collaborate more and to go into the unknown, no matter how scary it may be. There is beauty in everything and creating something that can combine two art disciplines, can create something that is exceptional.

Hardmon, Malik

Institution: ***IL - Quincy University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Brayden Luckhaupt,
Rees Treaster,
Malik Hardmon

Abstract Name: Enhancing Healthcare with Real-Time Body Gesture Recognition: The DroneX Solution

Due to the increasing popularity of drones in mainstream entertainment and business sectors and the limitation of controllers, we realized the need for hands-free control and expansion of user-defined commands that hardwired controllers cannot support for drones. This project uses the DJI Tello drone to recognize different commands through body gestures. The DroneX should distinguish between a series of body gestures and return the desired commands to the Drone. We have implemented the MediaPipe tool by using its APIs to currently recognize eight gestures; stop, take/up, land, forward, backward, left, right, and flip. We also used OpenCV and its APIs to display the image on a separate device. The DJI Tello drone is used as the environment for deploying the DroneX software. The Tello is connected to a separate device via Wi-Fi limited to 100 meters. It has a camera that is 5 megapixels (2592 x 1936), has an 82.6-degree field of view, and is HD 720 p. We are aware that DJI RyzeTM has a drone called the DJI Spark that uses hand gestures to issue commands. We are using body gestures to have a better range than hand recognition. Social media platform Snapchat also had a drone called Pixy that would take a selfie of the user, but Snapchat discontinued the efforts to develop it in August 2022. Pixy would just take a picture and return it to the user's hand. Currently, the DroneX project has some limitations, such as working in low-light flight conditions, harsh environment flight, and in an area of multiple detected objects. In future work, we plan to overcome the mentioned limitations, detect gestures at big distances, and include larger body gestures in our dataset.

Harrill, Shiloh

Institution: ***PA - Lafayette College***

Discipline: International Studies

Author/Contributors:
Shiloh Harrill

Abstract Name: Discrimination through Inadequate Healthcare for the Roma: Democratic Backsliding in the Czech Republic and Slovakia

The decline of liberal democratic institutions and norms is an increasingly prevalent phenomenon in Eastern Europe. In the Czech Republic and Slovakia, the inequality in access to healthcare between the Roma and non-Roma suggests democratic backsliding is taking place.Upon accession to European Union membership in 2004, the European Commission critiqued both states for the mistreatment of the Roma, incentivizing the governments to establish plans to improve their conditions. Yet these extensive, comprehensive programs have either stagnated or never taken effect. Despite democratic transition processes, discrimination towards Roma people endures, which is puzzling. How does the lack of healthcare protections for the Roma reveal a deeper-rooted problem of backsliding in democracies?The Roma are the largest ethnic minority group in both states. They constitute about 10% of the population and have been settled there since the mid-fourteenth century. Seven centuries later, they face severe racism and discrimination, especially with respect to obtaining adequate and consistent healthcare, which negatively affects their socioeconomic wellbeing. Adequate and consistent healthcare is perhaps a "high" expectation for anywhere – but the Roma are at a disadvantage in accessing healthcare when compared to non-Roma people in both countries. The unequal access sheds light on a lack of adequate social provisions for a minority group as a symptom of democratic backsliding.This study will analyze several key policies and outcomes from the time of EU accession and onward that focus on improving maternal healthcare, and thus socioeconomic welfare protections, for the Roma; policies will include the "Decade for Roma Inclusion," policies set forth by the OECD, and policies proposed by both the Czech and Slovak governments, among others. Statistical data from surveys and studies concerning discrimination will also contribute to this particular study.

Harrington, Alyssa

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alyssa Harrington,
Lacee Allen,
Aurora Daigle,
Lauryn Deetz,
Abigail Lemos,
Brayden Wibel

Abstract Name: **Parental Involvement in Education B**

How relative is parental involvement in a child's education to the overall success of the child? Can parents be too involved in their child's education? In society today we are seeing an increased debate over the different types of parents and how good or bad they are to the overall growth and development of their children. Are helicopter parents harming their children's future? Are free range parents raising children with no rules or boundaries providing a need for society to deal with the evenual negative outcomes? The goal of this research is to study the different parental involvement levels in the education of their children and determine what positive and negative outcomes are present under each type of parental behavior. Some criteria that will be important in this study are the level of parental invovlement, to what age of the child does the involvement continue, academic performance and self-efficacy of the children. Other areas of interest in this study include whether gender and race/ethnicity are impacted differently under differing parenting styles. Correlational analysis will be completed through data collection in the spring semester of 2023.

Harris, James

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Political Science

Author/Contributors:
James Harris

Abstract Name: **Analysis of Social Control Mechanisms in Colonial Tanganyika**

In colonial Tanzania, British occupiers operated in a resource-limited environment. Colonizers largely maintained control through social methods rather than blatant coercion. Following independence, many social control systems failed. Systems of control were reinstated through economic means. Seemingly altruistic aid often made countries dependent on their former colonizers. Newly independent countries frequently became dependent on technology they could not maintain. Western countries frequently apply tariffs to African finished goods, keeping the country poor and labor cheap. Through the lens of Social Science, I explore the reinstatement and legacies of colonial systems of control in an independent study research paper. I will draw literature from political science, history, and sociology, as well as archival material. Any increase in personal liberty comes at the expense of the powerful; understanding the methodology of those who resist social justice allows leaders to create change more effectively. Modern social justice movements frequently oppose the legacies of colonial power. Understanding how systems of control are maintained is crucial to effectively changing society.

Harris, Kyra

Institution: *MI - Wayne State University*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Kyra Harris

Abstract Name: **Systemic Racism Domino Effects Amongst the Black Community: Housing, Education, and Mental Health**

Systemic racism continues to place Black people in a position of disadvantage. It involves multiple systems that establish complex and penalizing institutional laws to perpetuate discrimination and oppression amongst minoritized groups. Deriving from slavery, systemic racism originated when President Abraham Lincoln abolished slavery by ratifying the 13th amendment in 1865. Under President Andrew Johnson's leadership after the assassination of President Lincoln, states were allowed to continue to create their own local laws under the Reconstruction Act of 1867. States soon started to enact what was known as The Black Codes, which were laws that restricted Black people from their freedom and further exploited them as a cheap labor force. As time went by, these laws led to the full development of Jim Crow Laws in the 20th century. Similar to the Black Codes, the Jim Crow Laws continued to legalize racial segregation and limit opportunities for Black people. Despite the abolishment of slavery, segregation and discrimination against Black people still put limitations on true freedom. President Lyndon B. Johnson enacted the Civil Rights Acts of 1964 and 1968 that protected minorities from discriminatory acts in the workforce, education, housing, and other systems. In turn, White people in power developed underlying institutional policies to continue to limit progress for Blacks, which came to be known as systemic racism. This was prominent in housing, with discriminatory policies such as zoning and redlining. Research suggests that Black people's struggle to attain homeownership has had a domino effect on difficulties in other areas of daily life including education and mental health. The current comprehensive literature review sought to spread awareness of the long legacy of systemic racism and explore the ways in which this has impacted the housing, education, and mental health status of Black people living in America.

Harris, Tia

Institution: *MD - Bowie State University*

Discipline: **Biology**

Author/Contributors:
Jessica Shaw,
Treeana Jordan,
Tia Harris,
Kyle Pias,
Dr. Anne Wiley

Abstract Name: **Dietary preferences of invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge, Maryland**

Invasive species are a leading cause of environmental degradation in freshwater ecosystems. Invasive crayfish, for example, can displace native crayfish and consume large quantities of both aquatic macrophytes and native animals. While Maryland is home to three invasive species of crayfish, relatively little is known about their impacts to local food webs. Here, we collected invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge in Laurel, Maryland and performed a feeding experiment to understand their dietary preferences and likely influence on refuge food webs. Crayfish were housed in 20 x 12 x 10-inch glass tanks equipped with air stones and polyvinyl chloride pipes for refuge. They were offered native plants and animal matter in three separate week-long trials, and their diet preferences were quantified based on the percent of food mass remaining at the end of a trial. We also used the stable carbon and nitrogen isotopic composition of wild red swamp crayfish to understand how their dietary niche compares with that of a common, native omnivore, the eastern painted turtle (Chrysemmys picta picta). Our feeding experiment showed that on average, red swamp crayfish preferred smartweed (Persicaria sp.) over other species of aquatic plants and animal matter over native plants. We also documented substantial variation among individual crayfish – a finding echoed in wild crayfish's variable nitrogen isotope values. Finally, we observed considerable overlap between the red swamp crayfish's isotopic niche and that of the eastern painted turtle. These results provide insight into the impact of an invasive species within one of the largest green spaces in the Washington, D.C.-Baltimore corridor.

Harrison, Evelyn

Institution: *MN - Hamline University*

Discipline: **Sociology**

Author/Contributors:
Evelyn Harrison

Abstract Name: **Free Lunch For Whom? Racialization of School Meal Policy Attitudes**

There has been quite a bit of research regarding the racialization of welfare and other economic distribution policies in the United States. However, this research has not yet addressed the question of how racial factors impact economic policy surrounding free and reduced lunch in the K-12 education system. Our ongoing research studies the impact of both racial resentment and racial threat on the likelihood of supporting legislation to provide universal free meals to K-12 public schools among White survey respondents. These data were collected in the summer of 2022 using Amazon's Mechanical Turk system (n= 575). Based on the existing literature, our first study plans to evaluate whether those higher in racial resentment and those situated in geographies with a higher proportion of people of color will express increased opposition to a universal school meal policy. In study two, we will turn our attention to a novel measure of racial affect: White Solidarity; an expression of in-group salience among White people. In this second study, we seek to assess whether a novel racial priming experiment will increase opposition in White respondents with higher levels of racial resentment and white solidarity. With white solidarity specifically, we expect that effects will be mediated by the percentage of students of color in the district, since their approval may be impacted based on their perception of which groups might benefit. Data analyses are in progress and results will be provided along with an in-depth discussion of the project's relevance and impact.

Harsh, Yuvika

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biology**

Author/Contributors:
Yuvika Harsh *Cyntanna Hawkins* *Kyung-Don Kang*
Sam Gary *Gregory Friedman* *Anita Hjelmeland*

Abstract Name: **Inhibition of Acid Ceramidase Augments Herpes Oncolytic Virus-Based Therapy in Recurrent Glioblastoma**

Glioblastoma (GBM) is the most common malignant brain tumor in adults, is highly aggressive, and evades standard of care surgical resection, radiation, and chemotherapy, leading to near-universal recurrence. One mechanism through which GBM cells may avoid cell death is through a dysregulated sphingolipid metabolism, specifically, an increased abundance of sphingosine-1-phosphate (S1P) and decreased abundance of ceramides. Ceramide hydrolyzation by ceramidases produces sphingosine, which can then be phosphorylated to S1P by sphingosine kinases. Decreasing the production of S1P and increasing ceramides via inhibition of ceramidases constitutes a potential strategy for anti-cancer therapy.We recently demonstrated that inhibition of the acid ceramidase ASAH1, via genetic targeting with shRNAs or with the blood-brain barrier permeable drug carmofur, decreased glioma growth and migration. Interestingly, ASAH1 expression in macrophages was recently found to facilitate encapsulation of herpes simplex virus-1 (HSV) in multivesicular bodies, thereby mitigating disease. These data suggest that ASAH1 inhibition in GBM could also improve the efficacy of oncolytic HSV therapy. Therefore, we explored the effect of pharmacologic and genetic inhibition of ASAH1 on cancer cell killing of oHSV G207 in patient-derived xenografts. Our preliminary data has demonstrated a significant decrease in GBM cell growth upon treatment of cells with the combination of carmofur and G207. Our data also suggest that recurrent GBM xenolines with shRNA knockdown of ASAH1 are significantly more sensitive to G207 compared to non-targeting controls. Considering G207 is safe in both adult and pediatric glioma patients and carmofur is used internationally for the treatment of colon cancer, we believe that our findings are highly translational.

Hartin, Sarah

Institution: ***CO - University of Colorado at Boulder***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sarah Hartin,
Elizabeth Allan-Cole,
Rachel Garman,
Michael Toney

Abstract Name: The Effects of Pressure on the Electrochemical Behavior of Fast Charging Lithium-Ion Batteries

Current battery technologies provide a barrier to more widespread adoption of electric vehicles. Batteries are needed that enable long range transportation with a charge that resembles a gas station like stop, known as fast charging. There are two main degradation mechanisms that cause battery capacity fade. Loss of lithium inventory (LLI) leads to less active lithium available to cycle through the battery as it charges and discharges due to lithium plating on the graphite anode. Volume changes during the cycling process cause electrode damage that leads to a loss of active material (LAM). This project focuses on the effect of pressure on the electrochemical behavior of lithium-ion batteries. The batteries are cycled with a uniform pressure application at 10 psi, 50 psi, and 125 psi. Batteries are also cycled between rigid plates, which provides a non-uniform pressure. A uniform pressure application leads to a more homogeneous reaction environment and reduces electrode volume changes. Batteries are constructed using graphite anodes and NMC-532 cathodes from two different electrode series with different capacities. A higher capacity leads to more room for lithium intercalation during the charging process. The batteries are cycled up to 140 cycles at 3 different charge rates: 1C, 6C, and 9C, where 1C is the time it takes to fully charge the battery in 1 hour. Once the batteries finish cycling, we look at trends in the electrochemical data, namely capacity fade, and dQ/dV (change in charge over change in voltage). This experiment is currently in progress, but the initial results are showing less variability for batteries cycled under higher pressures and using the higher capacity electrodes.

Harvey, Adela

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Psychology/Neuroscience

Author/Contributors:
Adela Harvey *Amber Duenckel* *Aundrea Bartley*
Lynn Dobrunz

Abstract Name: Evaluation of Aggression throughout the Estrous Cycle

While aggressive behaviors have commonly been explored in males, females are just as likely to express aggressive behaviors. Enhanced estrogen levels are correlated with increased aggressive-like behaviors. It is unclear if the changes in estrogen levels during the estrous cycle will modulate aggressive-like behaviors, such as dominance. There is still a lot to be discoveredabout the underlying molecular mechanisms involved in estrogen's regulation of these behaviors. Neuropeptide Y (NPY) could serve as a mediator between estrogen and aggression. NPY is highly expressed in brain regions associated with aggressive-like behaviors, such as hippocampus and prefrontal cortex. Pharmacological and genetic manipulation of the NPYergic system inversely modulates aggressive behaviors. For example, loss of NPY Y1 receptors enhanced biting behaviors. In addition, estrogen regulates NPY levels and has been shown to have a sexual dimorphism. In the arcuate nucleus, NPY mRNA levels are variable based on the stage of the estrous cycle. Thereby, indicating the importance of estrogen and NPY to aggression. This study will determine whether NPY levels modulated by the estrous cycle are involved in aggressive-like behaviors. In this study, aggressive-like behaviors will be assessed using the social dominance tube test. The high estrogen (proestrus, estrus) stages were paired against low estrogen stages (diestrus, metestrus) as determined by vaginal lavages. The preliminary data suggests that in young adolescent mice (5-9 weeks), the non-sexually receptive group is more dominant compared to the sexually receptive group. Using tissue harvested the same day as tube tests, ELISAs will be conducted to determine NPY levels. We hypothesize that NPY levels will be lower during low estrogen phases of the estrous cycle, and correlate with aggressive behaviors. Overall, this study will help fill the gap in understanding the underlying mechanism involved in female aggressive behaviors.

Hasan, Junaid

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Chemistry/Materials Science

Author/Contributors:
Junaid Hasan *Nichole Cassell* *Joseph Kannel*
Matthew Ray

Abstract Name: Microscale Synthesis of Fusible Alloys and Low-Melting-Point Metallic Nanoparticles

Fusible alloys melt at a low temperature and typically consist of metals such as indium, gallium, bismuth tin, and zinc. These alloys can be used in applications such as electrical solder, thermal fuses, liquid metal coolants, die casting, and rapid prototyping. Additional metals such as mercury, lead, cadmium, and even thallium could also be used but are more restricted in their potential applications due to high toxicity. Some of these metals, such as indium and gallium, are relatively expensive making it advantageous to conduct microscale research of new fusible alloy compositions on a small scale. Such syntheses are challenging due to the comparatively high surface area to volume ratio of microscale samples leading to significant oxide formation when being mixed in the melt phase. A method has been developed to prepare alloy samples of various compositions at a 500 mg scale using a rosin-based flux to protect the molten surface and promote mixing without the need for a vacuum furnace or inert atmosphere. The resulting alloy samples were characterized by dynamic scanning calorimetry (DSC) and optical microscopy and were found to have the expected melting points and microstructure when compared with known phase diagrams found in the literature. Fusible alloy samples were then converted to low-melt-point metallic nanoparticles using an ultrasonic nanoemulsion method. Samples of the selected alloy were pre-heated and sonicated in mineral oil using a probe sonicator. The resulting high shear converted droplets of molten metal into particles ranging in size from tens of nanometers to a few microns depending on the intensity and duration of the applied sonication. Particle size and distribution were characterized by optical and scanning electron microscopy. The methods used to prepare and characterize fusible alloy samples and nanoparticles will be discussed.

Hasegawa, Akira

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: English/Linguistics

Author/Contributors:
Akira Hasegawa,
Allison Nieto,
Winston Wu

Abstract Name: Computational Analysis of Pop Music Across Cultures

Songs are heavily influenced by culture. This project focuses on finding similarities and differences in both the lyrics and chords of popular songs in Spanish, English, Japanese, and Chinese. First, we collect a database containing the songs' title, lyrics, and artists by scraping several online websites. We then analyze the lyrics of the songs, performing sentiment analysis and analyzing other psycholinguistic categories on the songs as a whole and also as a word usage time series. Using clustering and topic models, we identify commonalities in songs across languages. This project also includes a chordal analysis to determine whether there are common chord structures and key signatures that are inherent to a specific culture's music. The result of this analysis provides an exact cultural interpretation of the lyrics for non-native speakers.

Hashimoto, Ryuto

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Education**

Author/Contributors:
Ryuto Hashimoto

Abstract Name: **Does General Education achieve its goals for post-secondary education? How one US university General Education course meets the assigned student learning objectives (SLOs)**

The academic literature emphasizes the importance, framework, expectations, and design of General Education (GE) curricula in higher education. However, actual assessment and accountability for the achievement of student learning objectives (SLOs) remain inconsistent in higher education. In the USA, the term General Education refers to university requirements which ensure an interdisciplinary education for a quarter or more of an undergraduate degree, The curriculum often is aimed to nurture competency in communication and mathematics, critical thinking and self-initiated learning, and moral education as a member of the global and diverse society. This investigation was conducted at an American Midwest public university in southern Minnesota. The GE curriculum fosters skills in communication, interdisciplinary knowledge and perspective within a diverse society with an ethical mindset and lifelong learning approach. This project will assess how one course, Human Relations in a Multicultural Society (HRMS), meets the assigned SLOs. HRMS provides education in self-awareness and skills that are essential for living and working socially in a democratic society. Since this is a GE course, the instructor wished to investigate its achievement of the many SLOs embedded in this course. In Fall 2022, the course instructor began using the 'Competencies' function of D2L Brightspace. She identified assignments and assessments related to each SLO. The research will report the course's effectiveness in meeting GE SLOs with data from each assessment (assignment). The results may be valuable for: course redesign, assessment practices, accountability to stakeholders, and institutional assessment.

Hassan, Zaki

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Joel Bares *Zaki Hassan* *Sohail Zaidi*
Vimal Viswanathan

Abstract Name: **Designing a 2D Traversing System to assist a DBD Plasma Wound Healing Probe**

A Dielectric Barrier Discharge (DBD) plasma probe was designed (Patent-US9433071-B2) to enhance rapid wound healing/sterilization. Investigation shows that process of wound healing is accelerated as the wound's surfaces are exposed to DBD plasma jets [Singh et. al. NCUR2022]. For this application, the DBD plasma probe needs to be held on a robotic arm to scan the targeted wound surface. In this work we are developing a 2D traversing mechanism that will hold the plasma probe to scan the surface (12x12 in2) at a desired speed. For the current design SolidWorks is used to build the 3D model for the entire system of the robotic arm. The designed 2D stages include two ball screws, aluminum rails, pillow blocks, and rail carriages that are fabricated to provide the required 2D movement to the arm. Raspberry Piis selected for activating the system. Two Nima 23 Standard hybrid stepper motors are selected for this project. A Qunqi L298N Motor Drive Controller Board is employed to control the stepper motor. Experiments show that the stepper motors reach to high temperatures after a continuous run of about 30 minutes. For an effective thermal management, two heat sinks (12V/55mm Heat Sink- VGA-CPU 8) are being attached to the motors and active cooling methods (fans) are used to convectively cool down the motors. This automated robotic arm is controlled through a microprocessor Arduino. The DBD plasma torch holder is machined from an insulated material to avoid any electrical sparking between the traversing rail and the torch that is powered by an ac voltage (5-10kV/15-30kHz) and uses helium as a working gas to generate plasma jet. The poster presentation will present the details on the design, calculations and the prototype system development and its testing with a DBD active plasma torch on a solid target surface.

Hassing, Josh

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Chemistry/Materials Science

Author/Contributors:
Josh Hassing,
Rebecca Haley,
Sam Alvarado

Abstract Name: Mechanistic Analysis of Ball Milled Chemical Syntheses

Ball milling is a mechanochemical strategy of growing value in green chemistry due to its simplicity, efficiency, and success in product conversion under liquid assisted grinding conditions. Moreover, its applicability to syntheses relevant to natural and pharmaceutical product development make an understanding of its mechanism one of high priority in both academia and industry. Despite its simplicity, however, the nature of ball milling prevents real time analysis of the chemical environment within reaction vessels, and byproducts within these vessels have been shown to produce unanticipated outcomes that are likely unique to their mechanochemical environment. Here we address these limitations through an investigative study of ball milling via byproduct analysis from ball milled cross electrophile coupling (XEC)reactions using a series of characterization methods meant to shed light into the elusive environment of ball milled reactions. Beginning with a thorough investigation of the seemingly unpredictable darkening of centrifuge tubes containing byproducts of ball milled XEC reactions, we analyze these byproducts via spectroscopic methods to show that this darkening of vessels is due to a gradual sublimation of molecular iodine associated with low XEC selectivity. Metallic behavior is also explored through isolation of catalytic and reductive metals in replicated XEC reactions to demonstrate the breadth of their contribution to product conversion in ball milled chemistry. Lastly, broader characterization techniques are employed to provide even more insight to the nature of chemical interactions within a ball milled environment.

Hatami, Khashayar

Institution: ***FL - University of South Florida***

Discipline: Computer Science/Information Systems

Author/Contributors:
Khashayar Hatami,
Maya Liao,
Humza Qureshi,
Nikola Grozdani

Abstract Name: Time Series Classification for Real-Time Feedback in Brain Computer Interfacing Video Game

Brain-Computer Interfaces (BCI) provides a direct communication link between brain and computer. Through the Functional near-infrared spectroscopy (fNIRS) technique, BCI measures brain activity. Research in BCI has been mostly focused on medical applications. However, BCI machines can also be utilized for recreational and meditative purposes, enhancing user engagement by utilizing brain signals as an additional form of input to interactive devices. Accurate classification of brain signals is one of the main challenges of BCI machines, preventing them from expanding their application and usage in everyday tasks. Our research focuses on the exploration of SK-time python library time-series classifiers for robust classification of mental workload to be integrated into an interactive BCI video game. NAML, a system that automates the running of time series machine learning algorithms on neural data, was used to access and analyze classifiers. Using NAML, two independent case studies were replicated to cross-validate classifiers with highest consistent accuracy on disjointed datasets. Four classifiers were chosen for further experimentation on The Tufts fNIRS Mental Workload Dataset, the largest open-access fNIRS dataset comprising of 68 participants. Samples chosen from the dataset included diverse subjects from different sexes and ethnicities given that we were aware models trained on homogeneous fNIRS training sets may not generalize as well to other racial groups. As a result of our investigation, we present the configuration of parameters for our best choices of NAML classifiers with the highest accuracy in classifying mental workload from fNIRS datasets. Future research is required to explore additional parameters and combined classifiers' experiments to develop classification models to be used in BCI video games.

Hathy, Angelina

Institution: *MN - Gustavus Adolphus College*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Quintin Morris,
Angelina Hathty,
Austin Carter,
Ezekiel Sundberg

Abstract Name: **Yoga As An Approach to Mental Recovery 48 Hours After an Intense Workout**

Background: Along with physiological changes, knowledge about yoga and meditation strategies for post workout mental recovery has been investigated. Results show that it improves mental clarity and reduces stress and anxiety levels. Purpose: The purpose of this study is to examine the effects of a 30 min yoga session on mental recovery 48 hours after a high intensity workout. Hypothesis: We hypothesize that if a yoga session is done immediately after an intense workout, it will produce greater mental recovery compared to those who do not participate in the yoga session. Methods: Twenty undergraduate students will complete a 30 minute intense workout. Following the workout, the intervention group will complete a thirty minute yoga/meditation session. The control group will not do anything outside of their usual routine. Conclusion: If our results align with our hypothesis, individuals can incorporate yoga into their exercise routine to benefit overall mental health and recovery.

Hau, Nathan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Torres *Nathan Hau* *Emily Vanderpas,*
Samuel Petit *Tamim Rajjo* *Brandon Hidaka*

Abstract Name: **Systematic Review and Meta-Analysis of how Heat and Antipyretics Affect the Course of Viral Upper Respiratory Infections in Adults**

Viral upper respiratory infections (URIs) are common (i.e. the common cold) and have caused pandemics in 1918 and 2020. URIs are frequently treated with fever-blocking medications (antipyretics, like acetaminophen or ibuprofen), because they reduce symptoms. However, feveris an evolutionarily-conserved response to infection that mechanistically enhances various immune processes and experimentally improves survival in animals.Human studies exploring the effects of antipyretics on the course or outcome of viral URIs are inconsistent. We performed a systematic review to see how body temperature modulation affects the course of viral URIs in adults. Our primary outcome was time to symptom resolution. We used predefined search criteria of peer-reviewed articles on Embase, CINAHL, PubMed, and Cochrane databases. Inclusion criteria included observational studies and randomized controlled trials of viral URIs (e.g. no antibiotics) in adults that compared antipyretics or heat-based therapies (e.g. sauna or exercise) to a control group. Each article was reviewed by two independent reviewers with discrepancies resolved by a third party. We reviewed the abstract and title of 8886 articles and 140 full texts. Thirty-one studies met inclusion criteria for data extraction, of which 27 studies tested antipyretics and 3 tested heat-based therapies. There was significant heterogeneity among studies and only five studies reported the primary outcome. Meta-analysis of randomized controlled trials found no significant effect of antipyretic use on the average number of days it took to resolve an URI: -0.2 days (95% CI: -1.3 to 1.0) comparing antipyretic group versus control. In conclusion, we did not find evidence that antipyretics significantly prolong URIs overall. However, there may be other costs of blocking fever in URIs (e.g. complications like pneumonia) or antipyretics may prolong illness in specific types of infections or patients. Our inconclusive findings underscore the importance of further research into this common clinical scenario.

Haus, Kira

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kira Haus,
Marshall Apps

Abstract Name: **Improving Patient Outcomes for Cancerous Tumor Removal**

Advancements in tumor ablation through use of biocompatible foam will allow for an optimized procedure, leading to decreased postoperative pain. Ablation involves using medical imaging, such as ultrasound and CT-tomography, to remove cancerous tumors in the liver, kidney, and lung. Targeted microwave energy is used to kill and remove cancerous cells. There is risk of thermal damage to neighboring healthy tissues, which can lead to potential complications to nearby organs and blood vessels, as well as unnecessary postoperative distress. There are current techniques to displace tissues and provide a buffer between the target tissue and its surroundings. Saline or CO2 can be used to separate the tissues, but are not always effective due to gravity. Saline tends to pool at the bottom of the cavity and CO2 rises, making both inadequate displacement agents. Creation of a biocompatible foam was completed, through a collaboration with Mayo Clinic Health Systems-Eau Claire and UW-Eau Claire, to replace current methods. The stiffness and stability of the foam displaces tissues for the duration of the procedure, and eventually dissipates. The foam provides thermal insulation during the procedure and prevents thermal damage from the ablative process. Such properties of the foam were quantified using agar hydrogel tissue mimics with a series of ablation trials. The hydrogels were embedded with thermochromic dyes that change color at a given temperature, and each temperature change represented the extent of tissue damage. Photos captured during the ablation allowed analysis of the color change in individual pixels to map to temperature to determine the insulative foam properties during the duration of the procedure. Through manipulation of biocompatible materials, an enhanced foam properly separates and insulates tissues. This will prevent extensive discomfort during and after the ablation procedure to remove the cancerous tissue and protect the healthy tissue, thus improving patient outcomes.

Hausman, Hannah

Institution: *MN - St. Catherine University*

Discipline: Biology

Author/Contributors:
Hannah Hausman,
Hannah Golding,
Amitoj Sawhney,
Douglas Brownfield

Abstract Name: **Aging Lung Tissue Regeneration: A Novel Way of Reopening the Plasticity Window of Postnatal Alveolar Type II Cells**

Prevalence of chronic lung diseases, such as pulmonary fibrosis and chronic obstructive pulmonary disease, have been found to increase with age. Pulmonary disease can occur from failure to maintain alveolar type 1 (AT1) and alveolar type 2 (AT2) cells located in the epithelium of the lung. It is currently known that AT2 cells are the facultative stem cells of the lung, and can transform into AT1 cells which make up the structure of the alveoli. This process happens throughout embryonic development, but AT2 cells can also replenish AT1 cell populations post lung injury. This research investigates whether this process that normally occurs during development can also occur in mature AT2 cells, and studies this question using genetically engineered mouse models at a postnatal stage. Using a double inhibition mechanism, we attempted to increase cellular proliferation by administering an agonist and conducted cellular lineage tracing with an SpcCreER lox system via tamoxifen-induced GFP expression. Through lineage labeling, we saw 7.5% (n=272) of GFP+ cells that were AT1 cells arising from AT2 cells that became plastic, mirroring the plasticity observed in development. Further research is needed to determine if this agonist can be used to epigenetically unlock mature AT2 cells. This result would provide a mechanism to temporarily induce plasticity in a patient's own AT2 cells in an attempt to regenerate their lungs in disease.

Haverlock, Iliana

Institution: *OH - Capital University*

Discipline: English/Linguistics

Author/Contributors:
Iliana Haverlock

Abstract Name: **The Monstrous Woman: Tracking Dissociative Feminism From Frankenstein to Fleabag**

Since the early 2010s, a trend has been emerging in women-led and feminist media— one that has found itself as well in the individual and larger cultural psyches of the Global North's feminine people. In her article, "The Smartest Women I Know Are All Dissociating," Emmeline Clein identifies and calls this trend dissociation feminism.What Clein's article reveals is a mindset deeply resonant among women— a subjection to struggle, a resignation to the notion of painful womanhood. At its very core, dissociative feminism takes external patriarchal forces and turns them inward; no longer is a patriarchal society mentally, physically, or politically oppressive, intrinsically unsustainable for women's survival and well-being. Instead, dissociative feminism decides that women are inherently familiar with hardship, for femininity itself is pain. When this abuse is presented to come from within, women are therefore equipped with a dissociative instinct in the face of their trauma— feminine struggles become absurd and darkly comical, while detachment and self-destruction become tools of survival. Using historical feminist theory to examine Mary Shelley's 1818 novel Frankensteinand Pheobe Waller-Bridge's screenplay Fleabag (2016-2019), this paper illustrates how lost, ignored, and disregarded sexual autonomy causes a nihilistic dissociative affect to emerge as the dominant cultural response to patriarchy in separate moments of sociopolitical crisis. Despite its pervasiveness in the feminine psyche, this dissociative affect hides itself in women's literature as an under-critiqued mode of self-voyeurism and manifestation of patriarchal trauma. Such inquiry is relevant in order to detect and examine harmful expressions of feminist theory in a new digital age, as well as consider the future of the movement as it moves into fifth-wave feminism.

Hawks, Ruby

Institution: *SD - University of South Dakota*

Discipline: Biology

Author/Contributors:
Ruby Hawks

Abstract Name: **Measuring bioaccumulation of selenium and its role in synthesis of proteins in False Map Turtles (Graptemys pseudogeographica)**

Metals and metalloids are becoming more prevalent in lakes and reservoirs of South Dakota which are toxic and hazardous in high concentrations or when biomagnified through trophic levels. Selenium is of particular concern as it can bind into the structures of proteins in place of other elements, changing protein structure and function within affected organisms. Zebra mussels (Dreissena polymorpha) are an invasive filter-feeding metal-bioaccumulating species that are rapidly spreading upstream through the Missouri River. False Map Turtles (Graptemys pseudogeographica) are a common predator of Zebra Mussels. Detectable selenium content in the proteins of False Map Turtles may confirm that high concentrations of selenium contribute to uptake into the proteins themselves. It was predicted that there would be a difference in selenoprotein content between turtles downstream vs upstream. To test this hypothesis, False Map Turtles were randomly sampled from Lake Francis Case (upstream) and the 59 Mile Stretch of the Missouri River (downstream). Blood samples were randomly selected from both sites and centrifuged down for plasma samples which were were tested for selenoprotein concentration using an ELISA protein assay. Based on a Bayesian statistical model, there is a 96.3% probability that Lake Francis Case absorbance values are higher than the 59 Mile Stretch of the Missouri River absorbance values. Higher absorbance values are indicative of higher concentrations of selenoprotein. This suggests that the turtles of the 59 Mile Stretch are exposed to lower levels of selenium than those of Lake Francis Case despite its predicted higher concentration due to the consumption of invasive Zebra mussels downstream. This work demonstrates the critical need to monitor the impacts of this invasive species on threatened turtle species.

Hayes, David

Institution: *FL - Florida Atlantic University*

Discipline: Economics

Author/Contributors:
David Hayes

Abstract Name: **The Power of Party over Purchasing Plans**

In recent years, home prices have risen by a shocking 43.7%. The median home price grew from $268,606 in January 2020 to $385,959 in July 2022. Americans looking for a home are faced with a difficult question: as prices continue to increase, is it better to buy or rent? According to my survey, 66.8% of Americans believe that it's better to buy. With this in mind, I wanted to find out how one's political affiliation influences purchasing decisions. I believed that if someone was a Republican, then they were more likely to purchase a house in the next year than a Democrat.To test my hypothesis, I wrote a survey using Survey Monkey and gathered 200 responses from Americans over 18 using Amazon M-Turk. While the results showed that about 67% of Republicans and Democrats think it's better to buy a home than rent one in the current market, their actual likelihood of buying tells a different story. Surprisingly, 50.8% of Republicans were very likely to buy a home within the year compared to only 37.2% of Democrats, which is statistically significant at the 1% level. This stark difference between parties' short-run purchasing plans is surprising, and public officials can use this contrast to garner support for housing-related policy in the future.

Hayes, Eboni

Institution: *NC - Winston-Salem State University*

Discipline: Education

Author/Contributors:
Eboni Hayes,
Amarachi Chukunyere

Abstract Name: **Growing Together: Children's Expectations and Reactions to an Urban School Garden Experience**

Children from low-income families are at high risk for food insecurity, unhealthy diets, and low intake of fruits and vegetables (Nury 2017). In general, community gardens have been suggested as a possible method to address food insecurity. Community gardens have been shown to increase intake of fresh vegetables (Algert, Diekmann, Rendellda,; Gray, 2016). These gardens can provide food insecure communities with more access to fresh vegetables and fruits that they might not have access to on a regular basis. School gardens have the potential to teach children a variety of educational concepts. Additionally, school gardens may help children increase their intake of fruits and vegetables and have been recommended as a unique way to address food insecurity by providing children with more access to more fruits and vegetables. School children play a large role in the success of school gardens. Thus, the purpose of this project is to examine children's expectations, motivations, and reactions to a school garden experience. Additionally, the project seeks to examine the impact of school gardens located within urban, food insecure communities. The project will be implemented with a partnership between Winston-Salem State University's Growing Together Program and a local Title I Elementary School in the county. Using surveys, data will be collected from elementary school children (ages 10-11) who participate in an after-school gardening club program. Data analysis will include examining children's expectations, motivations, and experiences.

Hayne, Molly

Institution: *FL - University of West Florida*

Discipline: **Biology**

Author/Contributors:
Molly Hayne,
Viktoria Bogantes

Abstract Name: **Using Museum Specimens for Taxonomic and Molecular Research: A Study of the Marine Annelid Terebellides stroemii**

Natural history museums are valuable repositories of biodiversity that can provide insight into the evolutionary diversification of organisms living and extinct. Yet, genetic data often remains locked away in formalin-fixed museum specimens, as this fixation process preserves tissues but crosslinks proteins and DNA, resulting in fragmented sequences. This leaves unanswered questions about phylogenetic relationships as well as the presence of cryptic species within previously described species. Cryptic species occur when genetically distinct individuals are found to be erroneously grouped together due to their morphological similarities. One species in particular, the marine annelid worm Terebellides stroemii, has been the subject of recent morphological and molecular studies, in which the presence of multiple cryptic species has been indicated. However, older museum deposits of T. stroemii have not been re-evaluated since their initial collection and identification. Thus, it is possible that these samples may have been misidentified and could represent other members of the genus Terebellides. To comprehensively investigate and revise the taxonomy of a species such as T. stroemii, it is necessary to use both morphological and molecular techniques, so that morphological findings can be corroborated and compared to underlying genetic information. Here we investigate the taxonomy of preserved museum specimens of T. stroemii by conducting a morphological analysis, designating morphotypes, and developing a protocol for extracting DNA from formalin-fixed tissues. The contributions made by this project will help build a more thorough genetic record of Terebellides, and will build on previously established methods for unlocking genetic data in museum specimens. This knowledge is essential for creating more informed conservation efforts and ensuring that the collections deposited in museums are credible and comprehensive sources for future research.

Hazlett, Lilia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Music**

Author/Contributors:
Jessica Borchardt,
Lilia Hazlett,
Haley Herem

Abstract Name: **Mozart Basset Horn Trio**

The UWEC Clarinet Trio has prepared a performance of Divertimento No. 3, K. 229 (439b)by Wolfgang Amadeus Mozart. Although this work was originally composed for basset horns (a member of the clarinet family with a lower, rounder tone),we will beperforming this piece on the modern standard: B-flatclarinets.This five-movement work opens and closes withfastmovements (the Allegro and Rondo). The middle movements are two medium-fast Menuettos, and one slower movement (Adagio). Overall, the work is light-hearted with the Adagio providing a more thoughtful character and tone.Throughout our time rehearsing as an ensemble, we have learned many things about the history of this music and the Classical style. Mozart was considered to play a big part in forming a new musical era known as the Classical Era. His groundbreaking style of composing was uniquebecause itused a newer homophonic sound rather than polyphonic texture. Divertimento No. 3 is homophonic, meaning it has a melody and an accompaniment. In this work, each movement illustrates a different moodvia varying harmonies that are supplemental to the melody, which is usually played by the first clarinetist. The articulations and dynamics assist in portraying the emotions of the piece. We have chosen to switch parts toallow each member of the ensemble to lead and also play the supporting parts. This is important for each member to show their take on the piece.

Hazzard, Hannah

Institution: *IA - University of Iowa*

Discipline: Psychology/Neuroscience

Author/Contributors:
William Guiler,
Hannah Hazzard,
Payton Douglass,
Jacob Dale,
Mark Niciu

Abstract Name: **Effects of Ketamine on SK-n-SH Cell Line and Opioid Receptor Presence: A Feasible Study**

It is estimated that roughly 30% of people in the US have some form of treatment resistant depression, and ketamine has been shown to alleviate symptoms of depression in treatment resistant populations. Evidence suggests ketamine's antidepressant effects are the result of increases in brain-derived neurotropic factor (BDNF) potentiation and activation of the mTORC1 pathway, promoting synaptic plasticity and growth in addition to modulating glutamate. In the process of investigating cortical spheroids as a non-animal model of depression, we first wanted to observe the effects of ketamine in the SK-n-SH human neuroblastoma cell line to establish procedure and proof of concept. It was expected that ketamine administration would increase dendritic complexity in the differentiated cell line by promoting BDNF potentiation and mTORC1 pathway activation. SK-n-SH cells were differentiated into neuronal-like structures, exposed to different ketamine concentrations over two weeks, and imaged for Sholl analysis to assess dendritic morphology. Our ANOVA results showed significant differences in branch number and mean complexity index, but not in mean branch length suggesting high concentrations of ketamine resulted in an increased number of smaller dendritic spines. Additionally, the presence of opioid receptor in these cell populations was confirmed and future work will observe if ketamine exposure has an effect on receptor density. Going forward, we plan to repeat this experiment for a greater N value to increase reliability and validity of the results and run similar experiments in human cortical spheriods.

He, Nichol

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Nichol He,
Connor Kamrowski,
Jordan Allen,
Rahul Gomes,
Sushil Garg

Abstract Name: **A Deep Learning Model for Pancreatic Ductal Adenocarcinoma Chemotherapy Outcome Prediction**

Pancreatic Ductal Adenocarcinoma (PDAC) is an aggressive abdominal malignancy, with an overall 8.5% 5-year survival rate. PDAC is often detected too late for surgical resection and is associated with resistance to chemotherapy and radiation. To minimize ineffective chemotherapy treatment, the ability to identify tumor characteristics and predict chemotherapy response is essential. Morphological characteristics of PDAC tumors can be extracted from CT scans and are associated with tumor characteristics and behavior. In this research, a deep-learning system for predicting chemotherapy outcomes based on CT scans is being explored. To establish the foundation for this system, a segmentation model is being developed and optimized. The effects of novel data augmentation techniques, including window-leveling, histogram matching, five-fold cross-validation, and YOLO bounding-box-based cropping on segmentation accuracy are examined. The morphological characteristics of PDAC tumors, upon initial inspection, revealed that over 50% of Radiomic features are statistically different between normal and abnormal patient populations. By establishing techniques for standardizing CT scans from different datasets and using a flexible segmentation model, we aim to create a pipeline for pancreas segmentation followed by tumor extraction using Radiomic texture analysis.

Headley, Chrissy

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Devyn Pfaff,
Brenna Moeller,
Ryleigh Lemanczyk,
Chrissy Headley,
Mary Endres

Abstract Name: Racial-Ethnic Identity and Academic Success B

There is immense discussion on what helps orhinders academic success. A person knowing who they are, no matter who, tends to know what they want and how to get it. This is not different in the academic setting. There are many different levels of understanding who we are within the culture from which we come. This study aims to connect several components of identity development with the resulting success in college. The aim is to see how the level of connection with one's racial-ethnic group, awareness of the perceptions by others and how one's racial-ethnic group is seen through the lens of academic achievement will impact the overall success in college. Other areas of interest in this study include college experience and how it impacts the motivation to attend classes and involvement in on campus activities connecting the student to the college leading to academic success. The final area that will be considered in this research is the level of college preparedness of the student and how the family or culture contributed to that preparedness. Correlational analysis will be completed through data collection in the spring semester of 2023.

Heagy, Kylie

Institution: ***IN - Indiana University Purdue University Indianapolis***

Discipline: Psychology/Neuroscience

Author/Contributors:
Kylie Heagy,
Laura Hawley,
Charles Goodlett,
Randall Roper

Abstract Name: Developmental Delays in the Ts65Dn Mouse Model of Down Syndrome

Down syndrome (DS) is caused by the triplication of human chromosome 21 (HSA21) and produces developmental abnormalities including hypotonia, delayed development of age-appropriate motor skills, and delayed development of normal reaction times to stimuli. These developmental delays impact the quality of life of individuals with DS. Ts65Dn mice contain a triplication of approximately 100 protein coding genes that are orthologous to genes on HSA21 and exhibit brain structure abnormalities and sensorimotor developmental delays similar to humans with DS. We hypothesize that trisomic mice will reach strength milestones, righting reflexes, and responses to tactile stimulation later than their euploid counterparts. These three tests are performed on postnatal (P) 3 through P21. Tests are scored by immediate observation and from video recordings, with criterion for achieving the test being set as two days of successful target behavioral responses. This is defined as holding onto a bar with both forepaws for 10 seconds three times in a row for forepaw suspension, flipping over onto all four paws in under three seconds for righting reflex, and removing a sticker from the mouse's nose within 60 seconds for tactile stimulation. Preliminary data shows that, for forepaw suspension, euploid animals achieved the task after trisomic animals. For righting reflex and tactile stimulation, however, euploid animals achieved the task before trisomic animals. The completion of this research will allow us to create a timeline of sensorimotor development for the Ts65Dn mouse model to provide a reference point and timeline for future research and potential interventions.

Healy, Meg

Institution: *NC - Elon University*

Discipline: Nursing/Health Science

Author/Contributors:
Meg Healy

Abstract Name: **Comparing genotype and phenotype of antibiotic resistance profiles of Staphylococcus aureus isolates from cystic fibrosis patients**

One of the most common bacterial pathogens found infecting the lungs of cystic fibrosis (CF) patients is Staphylococcus aureus. Over time, S. aureus has mutated and evolved to evade antibiotic treatment by acquiring resistance genes. This resistance to treatment has contributed to an increase in chronic infections that decrease patients' quality of life and leads to death. Researchers often know what genes are responsible for these antibiotic resistance traits and sequencing technology has allowed the search for these genes among clinical isolates to be fast, easy, and inexpensive. However, the presence of a gene in an organism does not always correlate to its physical expression, sometimes leaving clinicians in the dark about the true antibiotic resistance of isolates infecting patients. Research is lacking on the comparison between gene presence and observed expression of antibiotic resistance for a wide array of current S. aureus isolates infecting CF patients. Therefore, this work seeks to investigate if genotypic data of antibiotic resistance obtained from different isolates of S. aureus matches with the resistance shown when grown with antibiotics. Clinical isolates of S. aureus obtained from the Cystic Fibrosis Biospecimen Registry at Emory University have been tested with six different antibiotics, each from a different class. To do this, different concentrations of antibiotics are added to media growing each isolate to understand how much antibiotic is needed to kill the bacteria. As expected, the results depict some discrepancy between the genotypic expectation and the physical expression of antibiotic resistance in strains of S. aureus, inviting further investigation into genetic predication of pathogens for antibiotic treatment. Overall, this work will provide valuable information of precise resistance levels of each specific isolate of S. aureus, which could later be used for more accurate predictions when looking only at the bacterial genome.

Heard, Kyle

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Nursing/Health Science

Author/Contributors:
Kyle Heard,
Typhanie Dumontet

Abstract Name: **Understanding Hhex deletion impacts on adrenal zonation**

The adrenal cortex is a key component of the endocrine system, which regulates hormone release throughout the body. The cortex contains 3 cell layers, each responsible for the production of steroid hormones. The Zona Glomerulosa, which produces mineralocorticoids, the Zona Fasciculata (zF), releasing glucocorticoids, and the Zona Reticularis, responsible for the androgens precursors synthesis. To adequately respond to hormonal needs, the adrenal cortex, and particularly the zF, is under tight control of the hypothalamic-pituitary-adrenal axis (HPA) via the pituitary hormone ACTH. ACTH drives proliferation through cellular division and increases adrenal cell size. Using single-cell profiling of the adrenal cortex, the laboratory newly identified HHEX, a transcription factor, as a gene enriched in the Zona Fasciculata. Its role in the differentiation process of other organs, such as the liver and pancreas, suggested HHEX implication in zF maintenance and glucocorticoid production. To gain insights into the role of HHEX in adrenal cortex function, we previously generated a mouse model of HHEX deletion in a context of high ACTH and observed that the adrenals were enlarged upon Hhex deletion. In this project, we aim to explore the impact of Hhex deletion on adrenal gland zonation and cell proliferation. We hypothesize that the adrenal hyperplasia observed is due to a dysregulation of cell proliferation and/or cell fate determination. Using Immunohistochemistry, we will assess the expression of known zonation markers of the Zona Fasciculata (AKR1B7, ABCB1B, and CYP2F2) and proliferation markers (KI-67). With this project, we are expecting to gain a better understanding of HHEX's role in adrenal function and maintenance. We will use our findings to provide the next steps toward furthering our understanding of adrenal gland pathophysiology.

Heath, JTaelii

Institution: ***OK - Langston University***

Discipline: Biology

Author/Contributors:
JTaelii Heath,
Robert Axtell

Abstract Name: Piperine Reduces the Inflammatory Effect of Cigarette Smoke on Immune Cells: Implications of Multiple Sclerosis Pathology

Multiple sclerosis (MS) is a chronic inflammatory disease that affects the central nervous system, commonly referred to as the brain and spinal cord. Inflammation causes demyelination of the nerves leading to neuronal damage and disability in patients. Inflammation, demyelination, glial activation, and oxidative damage are authenticated markers for MS. Smoking cigarettes is a lifestyle factor with severe health consequences. Smoking increases the susceptibility to developing MS and worsens the disease prognosis with severe health consequences for the general population. Cigarette smoke has over 4,000 chemicals that cause abnormal cell responses and tissue damage in the lungs, which drives pathology in MS. Our lab has shown that MS patients who smoke have elevated levels of S100 proteins in the blood. S100s are damage-associated molecular pattern proteins (DAMP), which drive severe inflammation in the central nervous system of MS patients. Black pepper (Piper nigrum) contains 5%-9% of the bioactive alkaloid, piperine, which may have neuroprotective, anti-inflammatory, and antioxidant properties. The goal of this project was to determine if piperine reverses the inflammatory effects of cigarette smoke. To test this hypothesis, we assessed piperine's in vitro effects on human peripheral blood mononuclear cells (PBMCs) cultured in cigarette smoke extract (CSE). Specifically, we cultured PBMCs with either 0%, 20%, or 40% CSE in the presence or absence of increasing concentrations of piperine. In the absence of piperine, CSE-induced PBMCs secrete the inflammatory DAMP, S100A9. Strikingly, we found a dose-dependent reduction of S100A9 by piperine in PBMCs cultured with either 20% or 40% CSE. This data provides evidence of a novel anti-inflammatory mechanism of piperine that inhibits DAMP release by immune cells induced by CSE. Our study gives cellular experimental evidence that black pepper components can mitigate the detrimental inflammatory effects of smoking.

Hebert, Jordan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Jordan Hebert,
Allison Beemer

Abstract Name: The Benefits of Universal Hashing for Message Authentication

In coding theory, Hashing and Hash functions are used to map messages to a short fingerprint that allows users to authenticate the identity of the code's sender.Hashing can be an optimal choice in securing messages against an adversary as long as the probability of two hash functions returning the same result is low (this is called a collision). In my research I investigate Universal Hashing, a method of selecting random Hash functions from a Hash family to guarantee a collision rate of 1/ (size of functions range). By applying Universal Hash algorithms to previous coding strategies that have utilized different Hash algorithms, I will investigate whether Universal Hashing provides fewer collisions and optimizes efficiency by decreasing the complexity in decoding.

Hedtke, Conner

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Physics/Astronomy

Author/Contributors:
Taylor Winter,
Conner Hedtke

Abstract Name: End Correction in Cylindrical Pipes

The goal of this project was to determine the end correction for circular tubes of varying lengths and diameters. Unlike a vibrating string, which has a node at each fixed end, a tube with open ends has a pressure node that extends beyond the physical end of the tube. This extra distance, which depends on the diameter, is the end correction. To determine this end correction, measurements of the tube's harmonics, length, diameter, and speed of sound were made. This presentation will display the frequencies (of the fundamental and first harmonic) and corresponding end corrections for tubes with varying lengths and diameters. Our results were compared to a well-known theoretical model. We found that the model underestimated the size of the end correction for low harmonics.

Heffernan, Madeline

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: World Languages

Author/Contributors:
Angela Gasser

Abstract Name: Transcription and Translation: Challenges, Methods, and Lessons Learned from Translating Spanish Language Oral History Interviews

Oral history interviews are a method of qualitative research that provide opportunity for stories to be heard that may otherwise be left unnoticed, in order to learn from these stories and enable change based on the perspectives that are shared. Voces del Campo/Rural Voices is a research project that aims to document and preserve the life experiences of people in Wisconsin, specifically in the Latinx community, by conducting oral history interviews. Given that Spanish is the primary language of many of the interviewees, transcription and translation of these interviews are key steps in the documenting and sharing of these experiences with a wide audience. Neither process is as straightforward as it may seem and can have crucial impacts on the integrity of the interviewee and the quality of data provided by the interview. This research first intends to explore methods of translation and transcriptions including naturalized versus denaturalized transcription and semantic versus contextual equivalence in translation. Furthermore, challenges such as accuracy, slang, word equivalency, figures of speech, and translator cultural competence and language familiarity will be examined. This will be accomplished by analyzing previous literature on these processes and offering a student perspective from the Voces del Campo project. Finally, a discussion of the lessons learned from transcribing and translating oral history interviews highlights the significance of the responsibility transcribers and translators have in accurately conveying the stories of the interviewees and the significance of the trust placed in them to do so in a respectful manner and offers practical advice for students performing interviews or oral history research in the future. The lessons additionally emphasize the importance of cultural understanding in these processes and the increased cultural understanding that comes with being a part of them.

Heil, Jenna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
McKenzie Lehto,
Jenna Heil

Abstract Name: **Law Enforcement and Mental Health**

Law enforcement is a stressful career that can lead to or exacerbate mental health issues in officers. The objective of this project was to identify and analyze stressors and mental health needs of local law enforcement officers in the Chippewa Valley. The study location helps us learn more about unique stressors and mental health needs of officers in small and medium-sized departments. To do so, we surveyed officers from six law enforcement agencies and conducted follow-up interviews with those who wanted to provide more insight. We found that the stress of shift work, strained personal relationships, and negative public perceptions were foremost on officers' minds. Additionally, officers reported that mental health resources were provided through their department in various ways including debriefing, peer support, and professional counseling. However, officers suggest that resources could be improved or expanded. This poster will highlight these findings, and more, in depth and discuss the implications of the results.

Heinecke, Olivia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Ashleigh Kroschel,
Olivia Heinecke,
Rahul Gomes,
Rick Jansen

Abstract Name: **Comparison of pathways and detection strategies for Pancreatic Ductal Adenocarcinoma (PDAC) using genetically engineered mouse model (GEMM)**

Pancreatic ductal adenocarcinoma (PDAC) is a deadly, invasive pancreatic cancer. Currently, there are five central models used to investigate PDAC, namely, human PDAC cell line, cell line xenograft, patient derived xenograft, genetically engineered mouse models(GEMMs), and organoids. Cell lines don't represent the heterogeneous nature of PDAC nor the pressures of the human immunesystem making them less relevant than other models. Xenografts have a low engraftment rate making the number of models available exceedingly small, and organoids are still in development and analysis phase. In this research, we focus on exploring GEMMs, themost useful in biomarker discovery and specific gene mutations. Using these GEMMs, an in-silico model will be developed for simulating PDAC. Steps would include, developing a model, genetically modifying it, and predicting how often PDAC develops in the model to understand the importance of that gene in PDAC progression. Preliminary research revealed several detection strategies like PanIns, CA 19-9, stromal-related circulating molecules, biomarkers, and mitochondrial DNA. Some gene activity or pathways toexplore may include COX-2, Notch pathways, MMP-7 expression, and MAPK pathway.

Helget, Zachary

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Economics**

Author/Contributors:
Zachary Helget

Abstract Name: **Determinants of MSA-Level Employment and Wages**

This study examines the determinants of intra-industry wage and employment differentials at the Metropolitan Statistical Area (MSA) level. There are several factors that potentially cause these differentials; the current study examines six relevant factors: corporate tax rate, cost of living, education, governor political party, civilian labor force, and unemployment rates. To answer my research question, I collect data from a variety of US Government and other websites, such as the US Census Bureau. For my analysis, I examine the “Construction and Extraction Occupations” sector, because the count and wages of these workers are less likely to be impacted by omitted factors, such as educational prestige. I construct a panel dataset at the MSA-year level, which includes observations from 2011 to 2019. Using ordinary least squares regression and panel data analysis techniques, I find that wage and employment variation between MSAs is due to a variety of factors. Most important, corporate tax rates significantly affect wage and employment at the MSA level; this impact is consistent with the current literature on the topic. My results also suggest that the state-level cost of living had a large effect on wages, which suggests that wages at the MSA level follow the general costs of that area. Surprisingly, the partisan affiliation of the governor plays an important role on wages and employment. States with a Democrat governor have higher average wages than those with a Republican governor for all years, likely because of the impact of higher wages in more populous states. Finally, I use simulation methods to compare current wage and employment values to those predicted in my model and find that my model predicts these outcomes well. Collectively, my results present important policy implications, as state-level policy can be crafted to improve wage and employment outcomes for workers in the US.

Hellyer, Soren

Institution: *IA - Iowa State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Soren Hellyer *Caleb Ogden* *Manish Kumar* *Siddhartha Pathak*

Abstract Name: **Studying the Effects of Aging on the Structure and Properties of Off-Eutectic Pb-Sn Solder Joints for In-Space Applications**

Soldering is a process in which molten metal is used to metallurgically bond two components together without melting the components themselves, predominantly used to create electrical and pressure joints. Metal joining processes such as soldering are currently being considered at NASA as possible techniques for use in in-space joint repairs and Mars rover sample return mission. However, the reliability of these solder joints is compromised when subjected to extreme conditions. Soldering studies during the in-space soldering investigation (ISSI) in 2003-04 aboard the International Space Station (ISS) were designed to gain a better understanding of solder porosity development, surface wetting, and equilibrium shape formation in microgravity. But these investigations have not considered the effect of aging on the solder microstructure and properties. Previous investigations have shown that near-eutectic 40Pb-60Sn soldering alloys exhibit grain coarsening and reduced mechanical properties with age, even at room temperature. Additionally, these investigations have shown that microgravity samples follow a similar aging pattern as terrestrial samples.In our current NASA EPSCoR project, solder samples will be produced in microgravity onboard the ISS and sent back to Earth for testing. The new experiments will include off-eutectic 50wt%Pb-50wt%Sn solder, a composition where the effect of aging is unknown. Understanding the effect of aging on off-eutectic solder is critical to understanding the properties of new samples produced onboard ISS in the coming years, as samples will not be returned to the lab and tested immediately. In this work, we report results from the microstructural characterization using scanning electron microscopy and resultant micro-to-nano mechanical response of 50wt%Pb-50wt%Sn solder produced in terrestrial environments as a function of aging time under room temperature conditions. The understanding gained in this study will enable robust and reliable protocols for solder-based solutions to address repair and fabrication needs in space exploration for years to come.

Helmberger, Elaina

Institution: ***TX - Texas Woman's University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Elaina Helmberger

Abstract Name: **Antenatal Education's Role in the Prevention of PTSD Following Traumatic Childbirth (PTSD-FC)**

Traumatic birth is an experience reported by 45% of new mothers, with 1.5-9% of those who reported traumatic birth developing post-traumatic stress disorder (PTSD) (Beck et al., 2018; PATTCh, 2021). PTSD's debilitating symptoms, including flashbacks and emotional dissociation, seep into every facet of a woman's postpartum and family life (Beck, 2015). Beck also found that intimacy with one's partner and aspects of mother-child relationships were affected, such as breastfeeding; some women even admitted "feeling nothing" for their child. Specific antenatal education strategies were found to reduce PTSD symptoms among Turkish mothers, including cognitive coping techniques and addressing childbirth-related fears (Isbir et al., 2016).This study seeks to understand the ways that antenatal education mitigates the effects of PTSD among United States mothers. Data will be collected from semi-structured interviews with three sample groups: antenatal educators, women who received antenatal education, and medical professionals treating women for PTSD. Researchers will analyze the data and extract emerging themes. Researchers aim to find support for the effectiveness of quality antenatal education. Findings from this study will be used to develop best practices for antenatal educators in the United States, to better the life quality of new mothers with PTSD and their relationships with their partners and infants. This will promote healthier and happier families, as well as improved child development outcomes.

Helms, Blake

Institution: ***FL - Jacksonville University***

Discipline: **Business**

Author/Contributors:
Blake Helms

Abstract Name: **Examining Pilots Spatial Abilities While Encountering Common In-Flight Distraction**

Throughout all phases of flight, pilots experience distractions such as a dropped pen, radio communication from air traffic control, or communication from other crew members. These distractions may influence a pilot's ability to determine their own or other aircrafts orientation within their operational airspace, decreasing the pilot's situation awareness. This study examined how pilot's spatial abilities are affected when encountering common in-flight distractions, specifically, audible radio communications. Eighty-five participants consisting of undergraduate students enrolled in a collegiate aviation program completed the Revised Minnesota Paper Form Board Test (RMPFB) that specifically tests the individual's ability to cognitively visualize objects in space. Forty-two participants completed the test with a distraction present (air traffic control audio communications) and forty-three participants completed the test without a distraction present. The participants represent an array of experience levels ranging from student pilots to flight instructors as well as other demographic factors that were recorded with a survey questionnaire. The analysis of variance (ANOVA) statistical analysis process was used to identify the differences between the two groups. Potential applications of this research will assist flight training managers in their development of training scenarios and protocols to further acclimate student pilots for various unexpected audible distractions.

Hemingway, Liam

Institution: ***CT - Eastern Connecticut State University***

Discipline: Mathematics

Author/Contributors:
Liam Hemingway

Abstract Name: Graph Partitioning Applied to Congressional Redistricting and Gerrymandering

Every ten years in the United States, congressional districts are drawn in each state by hand by state officials or committees. This can lead to biased drawings since the officials or committees want a certain demographic's voice to be dominant or a certain political party to win most of the elections. This is called gerrymandering and it is often discussed how exactly the U.S. should go about preventing the occurrence of gerrymandering, one such way is to create the districts mathematically rather than drawing them by hand. In this talkwe explore a method of turning a state into a graph using census block group data, then using a graph partitioning algorithm to divide the state into districts based on only population and edge cut. Through this process we found that the inclusion of edge cut came with some unforeseen geographic biases that brought the objectivity of the algorithm into question.

Hemmerich, Abby

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: FAN Abstract

Author/Contributors:
Abby Hemmerich *David Durkin* *Nicole Depowski*
Brian Wallace *Chimdimnma Esimai* *George Ude*
Darion A. Isom

Abstract Name: Panel discussion: Creating a developmental curriculum to build research skills

In this panel discussion, moderated by Abby Hemmerich, four panel members will share examples of undergraduate research embedded across the curriculum and within individual courses. These examples will highlight principles of research woven through progressive courses in chemistry, psychology, kinesiology, and natural sciences, helping students build skills developmentally from their first year to graduation. David Durkin (co-author, Darion Isom) will discuss a series of integrated labs to grow research skills throughout the middle years of the chemistry major, culminating in an independent, problem-based learning project. Details about the final "Special Project" will be presented; this project requires students to utilize all of their skills to independently design the experiment, request materials, perform of the experiment, and write the research report.Nicole Depowski will present a case study of a psychology program with research introduced at the introductory level, integrated practice across the curriculum, and a capstone senior thesis project. Early exposure to scholarship focuses on locating and reading research, while students gain skills in research ethics and design at the next level. The third year requires use of primary sources, with synthesis and analysis, culminating in a senior thesis project in which students produce their own research. Brian Wallace will discuss the process for building evidence-based practice and research principles into the kinesiology curriculum to prepare students for graduate school or health and fitness professions. Changes to student engagement in research and outcomes related to faculty-mentored research will be discussed.Chimdimnma Esimai (co-author,George Ude) will present a series of course-based research experiences that engage a whole class of students in a research question or problem. Although individual projects are restricted to a single course, students experience multiple opportunities for these projects across the curriculum, providing complementary content and developmental progression in skills.

Hemmerling, Phoebe

Institution: *NY - St. Thomas Aquinas College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Phoebe Hemmerling,
Sarah Wood

Abstract Name: **Supporting Best Management Practices Through the Purchase of Local Products**

In districts in or around the Wisconsin Red Cedar Watershed, phosphorus and other nutrients pollute the lakes, causing a substantial number of problems within the environment. As a community, it may feel impossible to help solve such a large-scale problem, but economically supporting farms that are utilizing best management practices is one of the biggest ways to help. One group of leaders within the Red Cedar Watershed communities collectively expressed interest in selling grass-fed beef directly to residents and local businesses. The ground beef would go directly to consumers' homes using subscription boxes, becoming easier to access and increasing revenue to the farms following best management practices. One of the questions facing farmers is how to market this new "lakes-approved" ground beef. This study used a 2 (Environmental vs. Economic Message) x 2 (Scarcity Cue vs. No Scarcity Cue) design, which combined to create four different mock advertisements. Survey results found that respondents who received an advertisement containing an environmental benefit message were significantly more willing to purchase this product. These consumers were also willing to pay more when their advertisement contained the environmental message. Neither variable directly changed intention to buy the product. This is important primarily because intentions have been shown to be a stronger predictor of behaviors. Respondents also indicated that personal qualities, like taste, effect on one's own health, and quality of the product, were the most significant deciding factors in purchasing products. These qualities could be used in combination with an environmental message to push consumers towards making a purchase rather than just gathering interest in doing so.

Henderson, Robert

Institution: *OK - University of Central Oklahoma*

Discipline: Art/Music History

Author/Contributors:
Robert Henderson

Abstract Name: **The Battle in Europe against Fascist Graffiti by Contemporary Street Artists Irmela Mensah-Schramm and Pier Paolo ?Cibo? Spinazze.**

In the later years of the 2010's, far right and fascists groups across Europe have managed to gain footholds of power in the political offices in their respective countries. This newly found traction has allowed and inspired fascists to spread their ideology to the public on the streets by the means of graffiti. Much of the time, this graffiti is ignored or left alone as by the public due to complacency. How are artists in Germany and Italy combatting the spread of pro fascist graffiti on the streets of their cities? There are two notable artists in particular, Irmela Mensah-Schramm and Pier Paolo Spinazzè, also known as 'Cibo' who use their tenacity and artistic talents to combat the expanding issue with fascist graffiti. The research for this topic is done by using interviews and current news sources from both Germany and Italy. Secondary sources extend out to articles written about each of the artists from various sources such as photographers and political observers. Other sources collected were websites that include far right political organizations and street art education pages. With this data, this paper will show that these artists bravely use their talents in the face of violent threats to put up artwork to express hope, love, and togetherness.

Hennessy, Mike

Institution: *CA - Loyola Marymount University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mike Hennessy *David Kandah* *Hannah Agbayani*
Kennedy Necoechea *Tyler Keen* *Connor Powers*

Abstract Name: Spray Integration in the Cooling of High Heat Flux Electronics

Spray cooling is an efficient cooling technique for high heat flux applications like metal forming and electronic cooling. However, without fundamental knowledge of fluid mechanics in these applications, spray cooling can be ineffective due to dry-out at low spray rates, or excessive liquid accumulation at high spray rates. In electronics like computer chips, these errors can cause crucial and expensive failures. The purpose of this research is to further understand the fluid mechanics and heat transfer processes behind spray cooling, enhance the ability of the process, and develop a phase diagram of collected data. The first technique researched was single droplet impingement. To obtain data, a high-speed camera was used to take detailed videos of microdroplets produced from a piezoelectric nozzle. Microdroplets of various liquids, including ethanol, isobutanol, and isopropanol, were dropped onto a heated copper surface, with the surface temperature ranging from 60 to 200 degrees Celsius. Droplet diameter, velocity, and resident time were tracked, as well as the associated behavior of evaporation, boiling, or leidenfrost, and the rate at which this occurred. These results contribute to the understanding of mechanical properties of microdroplets, discovering which combinations of droplet diameter, velocity, and liquid properties will improve their function in spray cooling. Another aspect researched was the ability of multi-droplet sprays to cool a heated surface via impingement and evaporation. An experimental setup was developed and assembled consisting of a pressurized air and water supply connected to an ultrasonic atomizer nozzle, heated plate, and thermocouples that relayed results to a data acquisition system. Preliminary results determined that cycling nozzle operation yielded similar cooling results to continuous spray, while saving up to 70% of fluid consumed. Future variables to explore include recycling atomized vapor, determining optimal timing of cycles, and testing additional liquids.

Henriquez, Gianna

Institution: *PA - Slippery Rock University of Pennsylvania*

Discipline: Theatre and Dance

Author/Contributors:
Gianna Henriquez

Abstract Name: Sanar: Honoring Earth's Unwavering Resilience

Sanar is a solo choreographic project created in honor of mother earth and the pursuit of environmental awareness. The movement research consists of embodying the elements of nature and exploring the West African Adowa dance of the Ashanti tribe. This piece invites consideration of what it means to be in coexistence with the earth; what is our impact as humans? And how do we honor its unwavering resilience? The Adowa dance is inspired by the movements of an antelope. This dance was once used to heal the great Ashanti queen from sickness. Sanar's intention is to call forth a sense of healing, like the Adowa dance, for our environment. It invites critical reflection on environmental inequalities for marginalized populations, such as air pollution, food insecurity, contaminated land and water. Sanar is a reminder that environmental and social justice are intrinsically connected, and we have the agency to create change through awareness and respect.

Henry, Jonah

Institution: *GA - Georgia Southern University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jonah Henry *Joshua Bunting* *Sevki Cesmeci*

Abstract Name: **An Elastohydrodynamic High-pressure Seal for Super Critical Carbon-Dioxide Power Plants**

Supercritical CO2 (sCO2) power cycles are superior to traditional water-based, air-breathing, direct-fired, open Brayton cycles, or indirect-fired, closed Rankine cycles in terms of efficiency and equipment footprint. They hold great potential in nuclear power production, fossil fuel power plants, concentrated solar power, geothermal power, and ship propulsion. sCO2 power cycles must be demonstrated on the scale of 10–600MWe and at the sCO2 temperatures and pressures of 350–700°C or 20–35MPa for nuclear industries. The lack of suitable shaft seals at sCO2 operating conditions is one of the main challenges at the component level. So far, conventional seals all suffer from the incapability of handling sCO2 pressure and temperature in one way or another. To this end, we propose an elastohydrodynamic (EHD) high-pressure, high-temperature, and scalable shaft seal for sCO2 cycles. The higher the pressures are, the tighter the sealing while sustaining a continuous sCO2 film. For proof-of-concept purposes, a 2” static test rig was designed at Georgia Southern University before the actual dynamic testing at the Sandia National Laboratories. For simplicity, nitrogen gas was chosen, and the tests were conducted at room temperature. The test rig consisted of a 16.5MPa N2 tank; a cylindrical housing enclosing the static shaft and the test seal; steel tubing with compression-type fittings; an OMEGA–PX5500C0-2.5KA10E pressure sensor; and an OMEGA-FMA-1623AI mass flow meter. The static shaft had a diameter of 1.9995" and was made from steel, the test seal was made from PEEK. Data was measured using LabVIEW software and a National Instruments DAQ-Module-NI-9205. The experiments were performed for 50µm initial clearance and inlet pressure increased to 600psi. Initial experiments successfully demonstrated the throttling behavior of the EHD seal. Based on these preliminary results the EHD seal design could potentially be used in sCO2 turbomachinery. US-DOE through STTR Phase I and II grants, no: DE-SC0020851

Henry, Mya

Institution: *NY - SUNY Brockport*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Mya Henry,
Jacques Rinchard

Abstract Name: **Thiamin Deficiency in Steelhead Trout: A Comparison Between Lake Ontario and Lake Michigan**

Thiamin deficiency complex (TDC) has been documented in salmonine species from the Great Lakes. In this study, we measured thiamin concentrations in steelhead trout eggs collected at the Salmon River Fish Hatchery between 2015 and 2022. Eggs were also fertilized in 2015, 2016, 2017, 2022, and incubated to determine offspring survival and the lethal concentration that causes 50% of offspring mortality (LC50). Egg thiamin concentrations were also assessed in steelhead trout collected from Lake Michigan at three locations: Little Manistee River Michigan, St. Joseph’s River Indiana, and Kewaunee River Wisconsin. A new LC50 was determined at 5.4 nmol/g, lower than the previously estimated concentration. In Lake Ontario, egg thiamin concentrations in varied significantly among years (0.05), with the highest concentrations reported in 2016 (4.97 ± 1.50 nmol/g) and the lowest in 2020 (2.07 ± 0.75 nmol/g). A substantial number of fish (84.5 ± 17.92%) produced eggs below the LC50 across all years. Average egg thiamin concentrations of steelhead from all Lake Michigan sites were significantly higher than the ones reported in Lake Ontario and were above the LC50. To assess the cause of TDC, we investigated yearly changes in and fatty acid composition. We found that yearly fatty acid signatures in eggs significantly differed among years (0.05) and the fatty acids most responsible were 22:6n-3, 18:1n-9, 20:5n-3, and 16:0. Although these results suggest a potential shift in steelhead trout diet, average egg thiamin concentrations were below the LC50 across years and further investigation are required to determine how diet affects thiamin concentration.

Hensel, Ethan

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ethan Hensel,
Samantha Krueger,
Dean Wink

Abstract Name: **A Culturally Informed Approach to Improving Forest Diversity in Bad River Tribal Lands**

Forest diversification is essential to creating and maintaining healthy, resilient forest ecosystems. Forest diversification buffers the effects of climate change, creates new habitats for plants and animals, and improves biodiversity increasing the speed of succession. Without forest diversification, plant and animal life are at higher risk of localized extinction. More species and populations of plants and animals thrive in an ecosystem that facilitates their habitat needs. In this project we worked with the Mashkiiziibii (Bad River) Natural Resources Department to diversify their forested lands. We acknowledge that the Mashkiiziibii tribal lands are of cultural significance and their cultural values play an important role within their community. For this project, we used LiDAR images and superimposed soil maps to locate sand lenses that have the potential to house new tree species and improve biodiversity. By collecting and analyzing samples from the study areas in the field, we were able to verify our observations from remotely sensed data.

Her, Elizabeth

Institution: *WI - University of Wisconsin-Stout*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Hongdi Li *Elizabeth Her* *Emma Flemke,*
Lydia Kneubuehl *Pranabendu Mitra*

Abstract Name: **Effect of shortenings on the physicochemical, textural and sensory properties of gluten free cupcakes**

The objective of the study was to determine the effect of shortenings (butter, margarine, and vegetable shortening) for optimizing the cupcake formulations on the physicochemical, textural, and sensory properties of gluten-free cupcakes. The demand for gluten-free baked products is increasing gradually because a large number of populations are affected by gluten intolerance. Also, the right butter replaces and different gluten-free flour ingredients in cupcakes open a healthier cupcake option for the consumers. In this study, three cupcake doughs with oat milk and gluten-free flour were prepared using three dairy-free shortenings (butter, margarine, and vegetable shortening). The cupcake doughs were baked at 350°F for 20 min to develop the gluten-free cupcakes. The physicochemical, textural, and sensory properties of the cupcakes were determined. The statistical analysis ANOVA indicated that those three shortenings affected the physicochemical and textural properties significantly (0.05). However, the sensory panelists were not able to determine the difference among the cupcake samples (p>0.05). The sensory analysis for the overall acceptability results indicated that the vegetable shortening cupcake was the most preferred cupcake formulation having a score of 6.39 and the butter cupcake formulation was the least preferred one having a score of 6.11. The variation of water activity (0.72-0.76), L-value (57.28-65.09), and total color difference (34.12-78.61) wasfound among the cupcake samples. Relatively moderate textural properties such as hardness (15.70 N), cohesiveness (2.00), springiness (0.16), gumminess (26.14), and chewiness (26.57) were achieved by the vegetable shortening cupcakes. The findings of this study will be beneficial for the commercial development of gluten-free cupcakes with healthier ingredients.

Herem, Haley

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Music

Author/Contributors:
Jessica Borchardt,
Lilia Hazlett,
Haley Herem

Abstract Name: **Mozart Basset Horn Trio**

The UWEC Clarinet Trio has prepared a performance of Divertimento No. 3, K. 229 (439b)by Wolfgang Amadeus Mozart. Although this work was originally composed for basset horns (a member of the clarinet family with a lower, rounder tone),we will be performing this piece on the modern standard: B-flat clarinets.This five-movement work opens and closes withfastmovements (the Allegro and Rondo). The middle movements are two medium-fast Menuettos, and one slower movement (Adagio). Overall, the work is light-hearted with the Adagio providing a more thoughtful character and tone. Throughout our time rehearsing as an ensemble, we have learned many things about the history of this music and the Classical style. Mozart was considered to play a big part in forming a new musical era known as the Classical Era. His groundbreaking style of composing was uniquebecause itused a newer homophonic sound rather than polyphonic texture. Divertimento No. 3 is homophonic, meaning it has a melody and an accompaniment. In this work, each movement illustrates a different moodvia varying harmonies that are supplemental to the melody, which is usually played by the first clarinetist. The articulations and dynamics assist in portraying the emotions of the piece. We have chosen to switch parts toallow each member of the ensemble to lead and also play the supporting parts. This is important for each member to show their take on the piece.

Hering, Gracie

Institution: *WI - Chippewa Valley Technical College*

Discipline: Education

Author/Contributors:
Melissa Knopps,
Josie Jacobson,
Agnes Buttke,
Gabi Bowe-Hanson,
Gracie Hering

Abstract Name: **Expressions of Cultural Identities**

How might expressions of cultural identities take shape through language, stories, and other learning experiences in an elementary classroom? If preservice educators listen intentionally to the expressions of elementary students, will those studentsshare about their diverse backgrounds and cultural identities? Can these conversations support the classroom in an effort to be more culturally responsive? We will partner with a local elementary school and spendtime on site conferring withstudents about theirperceptions and contributions, connecting students' cultural knowledge to themselves and others through multimodal learning experiences, and gatherdata that will influencefuture teaching practices. Multimodal instruction is instruction that uses social and cultural resources such as drawings, technology resources, picture books, and storytelling. Student voice is listening attentively to students' perceptions and contributions.Cultural identity is the perception of self and others, and how children see themselves as a member of a group.

Hernandez, Euclides

Institution: *PAN - Technological University of Panama (Universidad Tecnológica de Panamá)*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alexandra Nuñez,
Euclides Hernandez,
Ricardo Chan

Abstract Name: **Valve control for the improvement of the main network of an aqueduct for human supply**

In Panama, there are problems with the hydraulic network for the supply of drinking water. In different provinces and towns, there is the problem that, for the distribution of the vital liquid, there is no automatic valve control system to control the pressures according to the demand of each section of the hydraulic network. This causes overpressure in the network and, consequently, an inefficient supply. These overpressures in the pipelines bring about different unfavorable situations such as shortening their useful life, increasing maintenance costs and, in the worst case, a rupture, thus causing the community to constantly remain without water for several days. Using a PLC and the outputs of voltage variables, and being able to close or open the valve depending on differences in pressure and flow and, at the same time, performing a remote monitoring of these variables through telemetry. The objective is to distribute water more efficiently, avoiding waste and extending the useful life of the hydraulic network and, more importantly, guaranteeing the availability of the vital liquid. Currently in the country there is the necessary equipment for the automatic control of the mains installed in multiple points of the country, but they are currently underutilized since they are activated manually by an operator on site. Without the knowledge of how to do it, so the idea was born to make a project that automatically avoids overpressure in the lines, thus avoiding waste of vital liquid, increasing the life of the matrix network, and lowering operating costs, since it avoids having to send an operator to the site for the activation of the valves.

Hernandez, Hidaly

Institution: *IA - Wartburg College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hidaly Hernandez,
Victoria Breitbach,
Maeve Dunne,
Natalie Paulson,
Samantha Larimer Bousquet

Abstract Name: **The Effects of Voluntary Exercise on Memory and Anxiety in Young Adult Female C57BL/6 Mice**

Exercise increases spatial memory and decreases anxiety. Physiological mechanisms are unknown, but a larger hippocampus can be associated with both of these outcomes. Nonspatial memory is not necessarily associated with the hippocampus, and thus may not similarly be increased by exercise. This study investigated the effect of three weeks of exercise on nonspatial memory and anxiety levels in young adult female C57BL/6 mice using the open field test (anxiety) and object recognition test (nonspatial memory). We hypothesized that mice in the exercise group would exhibit less anxiety-like behavior and would perform better on the nonspatial memory task compared to the sedentary group. Results showed that exercise did not change nonspatial memory and may have increased anxiety, contrary to the hypothesis. These findings may have been due to the tests used, so future studies could investigate other nonspatial memory and anxiety tests.

Hernandez, Jordan

Institution: *NM - University of New Mexico Main Campus*

Discipline: **Physics/Astronomy**

Author/Contributors:
Jordan Hernandez

Abstract Name: **Development of silicon tracking detectors for particle tracking experiments**

Silicon pixel detectors are an important element in particle physics experiments operating at the Large Hadron Collider (LHC) whose purpose is discovery of new physics and improved understanding of the Standard Model of particle physics. The Large Hadron Collider and its detectors will undergo upgrades in coming years that will enable them to observe increasingly rare processes which could be the key to discoveries. The upgrades entail development of new tracking detectors with excellent position resolution, excellent timing, and high tolerance to radiation damage. I will present my measurements of the qualities of state-of-the-art silicon tracking detectors under development for LHC experiments. I will also describe my work developing a test stand at the University of New Mexico to characterize the timing resolution of 3D silicon detectors as a function of hadronic and gamma dose. These results may have implications for the design of experiments throughout the first half of the 21st century.

Hernandez, Madalyn

Institution: *CA - California State University - Fullerton*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Madalyn Hernandez *Veronica Herrera*

Abstract Name: **"Don't Upset Your Grandmother": Disclosure Patterns of Latina Childhood Sexual Abuse Victims**

Despite being the fastest-growing community in the United States, few psychological theories have been developed concerning Latine mental health. Particularly, the origin of trauma-based coping mechanisms has yet to be examined from a culturally competent point of view. The development of a proper psychopathological theory is important because reports have shown disproportionately high rates of domestic and sexual abuse within the Hispanic community. This is accompanied by low percentages of police reporting and avoidance of subsequent treatments, like therapy. This study focuses on the help-seeking behavior of Hispanic women who have been sexually abused as children, with an emphasis on cultural factors that may influence non-disclosure. This will aim to address the lack of information about sexual abuse in Hispanic households and help develop a proper theory about cultural motivators that prevent help-seeking. Specifically, this study seeks to examine the relationship between the perpetrator and the victim (e.g. blood-related family vs. other) and how this affects disclosure and outreach behaviors. I hypothesize that a tendency for non-disclosure becomes the default response to traumatic events when children are raised according to passive values. I also hypothesize that I will find an association between non-disclosure and higher rates of machismo-oriented values in those who were sexually abused by family members, rather than non-family members. We use a semi-structured interview format that consists of two main parts. The first half of the interview focuses on open-ended qualitative questions that inquire about their family's response to the abuse. The second half includes surveys that measure cultural perceptions of gender norms (machismo and marianismo scales), self-concept, and severity of abuse. We will run a correlation test to see the relationship between machismo and marianismo as well as use narrative analysis to find themes within the interviews.

Hernandez, Melkisedec

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Erin Parcell

Abstract Name: Voices of Gun Violence

Voices of Gun Violence (VGV) is a an interdisciplinary, community-based project that provides a space for residents of southeastern Wisconsin to share their stories on gun violence. VGV uses qualitative research by conducting phenomenological interviews that are recorded and transcribed. The stories are analyzed revealing a wide variety of gun violence experiences. VGV has archived stories of gun violence that have impacted the community through homicide, domestic violence, neighborhood shots, robbery, suicide, bar/club shooting, domestic terrorism, and police brutality. Stories are shared on the project's website, which offers a living archive that allows the community to understand the multidimensional experience of gun violence. Thus far we have almost 50 stories on the website and working on 25 more. In response to their experiences, some VGV storytellers have become advocates in the community, while others have created educational opportunities, explored preventative tactics, or offered grief counseling to residents of the Greater Milwaukee area. VGV has provided a trusted platform for community members to have their voices heard, while attempting to bring into view the micro- and macro-level issues related to gun violence.

Hernandez, Monica

Institution: ***OK - University of Central Oklahoma***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Monica Hernandez

Abstract Name: The Tools to Change: A Guide to Developing Healthy and Intersectional Relationships with Masculinity in the Time of Radicalization

"The Tools to Change: A Guide to Developing Healthy and Intersectional Relationships with Masculinity in the Time of Radicalization," is an ongoing research project that explores the ways in which boys and young men are becoming more susceptible to incel and anti-women rhetoric as a way of maintaining oppressive forms of patriarchy and gender roles, both violent and not. Based on All About Love andThe Will to Change by bell hooks, this project seeks to inform audiences, regardless of gender, the importance of recognizing the steps of incel/incel-adjacentindoctrination as well as understanding ways in which we can combat toxic masculinity through empathy and willful learning. The project thus utilizes feminist theory to examine the ways in which gender roles create stringent social codes that inhibit a mutuality between the sexes. By acknowledging the importance of the male experience within feminism, one can contextualize the reasons formale violence, male loneliness, andmale rage through a feminist contextin order to offerlove, self-reflection, andcommunity as a transformative tool for men everywhere.

Hernandez, Patricia

Institution: ***MN - University of Minnesota - Rochester***

Discipline: Education

Author/Contributors:
Michelle Nelson,
Joseph Rezents

Abstract Name: Hands-On Learning: Assessing the Effectiveness of Model Kits in the Organic Chemistry Classroom

One of the most important skills for students to learn in organic chemistry courses is being able to recognize and convert molecules to varying representations such as skeletal structures, Newman projections, and chair conformations. Past strategies for developing this skill include computer based molecular visualization, commercially available model kits, and 3-D printed molecules. Since this ability is foundational in undergraduate organic chemistry learning, we want to investigate if using Molymod student model kits in the classroom translates to improved student understanding of different molecular representations. Gaps in student understanding that come from the nature of abstract concepts can be bridged through mechanical learning. Molymod student model kits are used throughout the (bio)chemistry University of Minnesota Rochester curriculum to promote multi-sensory learning and provide a medium that allows students to physically manipulate abstract molecules. This study illustrates examples of how the organic chemistry curriculum requires students to use the model kit to translate between wedge and dash drawings, perform conformational analysis, and determine the stereoisomeric relationship between molecules. Students also used models to identify octet violations in resonance structures, observe resonance patterns, and predict the stereochemistry of E2 eliminations. Quantifying student outcomes associated with model kit usage was performed through in-class multiple choice “clicker” questions, quizzes and exam questions. Methods of successfully implementing model kit usage solicited and unsolicited will be discussed.

Herrada, Carlos

Institution: ***WI - St. Norbert College***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Carlos Herrada,
Cynthia Ochsner

Abstract Name: Kinetic Modeling of Dopamine Transport Protein Inhibition by Indole Based Modafinil Analogs Using Rotating Disk Voltammetry

Dopamine neurons, which synthesize and release the neurotransmitter dopamine, create the reward circuit in our brains which allows us to feel pleasure and motivates us to repeat pleasurable behaviors. For example, eating a piece of chocolate causes the release of dopamine and reinforces the pleasure associated with chocolate consumption. Other functions of dopamine are regulation of sleep and motor movement.Presynaptic dopaminergic neurons release dopamine which diffuses across the synaptic cleft and binds to receptors on the receiving (postsynaptic) neuron. The signal is terminated when dopamine is transported back into the pre-synaptic cell that released it by a protein called the dopamine transporter. The dopamine transporter is the target of the therapeutics modafinil (a narcolepsy medication) and Ritalin (an ADHD medication) and the drugs of abuse cocaine and amphetamines. By inhibiting the dopamine transporter, these drugs slow down the reuptake of dopamine, increasing the dopamine signal. Modafinil specifically does this to promote wakefulness in people with sleep disorders. The goal of our project is to use small molecules with structures similar to modafinil (called structural analogs) to see how they affect the rate of reuptake of dopamine. The collected data is analyzed using kinetic models to learn about the dopamine transporter protein.

Herrera, Amber

Institution: *CA - California State University - Fullerton*

Discipline: **Education**

Author/Contributors:
Amber Herrera

Abstract Name: **Partners4Literacy: A Comparative Classroom Discourse Analysis During Delivery of Readtopia Instruction**

Summary Problem: Beginning communicators and preliterate learners in special education classrooms may not have access to the vocabulary necessary for developing dialogic behaviors essential for participation in their learning environment. Purpose: To examine teacher discourse with middle and high school students with complex communication needs during language literacy instruction within the first year of Readtopia (BuildingWings, 2022), an evidence-based and comprehensive literacy curriculum. Research Question: What are the number and type of dialogic behaviors that educators use during Readtopia? What are the barriers and supports toward the development of a transactional model of communication in three self-contained, special education middle and high school classrooms? Background: It is essential that beginning communicators and preliterate learners have access and the opportunity to participate in learning by asking questions and communicating with peers. When students with complex communication needs have question words accessible and educators available to teach them how to use them, there are increased learning opportunities.Methods: Research Design. Non-experimental mixed methods approach to analyzing teacher discourse during video recorded language literacy lessons. The unit of analysis is at the classroom level. Participants: Three teachers, serving 72 students in special-day, self-contained middle and high school special education classrooms. Procedure: Quantitative and qualitative approaches were used to analyze teacher-student discourse from eleven video recordings during 30-45-minute Readtopia lessons. Question types and prompt types were coded, categorized, and conceptualized.Results:Preliminary results of the discourse analysis revealed six primary barriers to, and potential supports of, the development of a transactional model of communication critical for the joint construction of knowledge.

Herrera, Andrea

Institution: *WI - Alverno College*

Discipline: **Biology**

Author/Contributors:
Andrea Herrera,
Eulandria Biddle

Abstract Name: **Isolation of Compost Bacteria with Antimicrobial Activity Against Human, Fish, and Plant Pathogens**

Due to many pathogenic bacteria developing antibiotic resistance, there is an urgent need to search for microbes that produce novel antimicrobials. These organisms can be used to produce antibiotics for human use and/or as biocontrol agents in aquaponics systems to protect fish and plants from pathogenic organisms. Plants and fish are highly important because they are essential resources to humans and the environment. Alverno College has an aquaponics system inside its greenhouse that could potentially benefit from these antimicrobial-producing microbes. Using these antimicrobial-producing microbes on plants and fish may help with their growth and cultivation. Previous studies have reported isolation of antibiotic-producing bacteria from compost, soil, water, and other environments. In this study, bacteria were isolated from two different compost samples. One gram of compost soil was emulsified in 9ml of sterile dH20. Each compost sample underwent serial dilutions and was plated on Brain Heart Infusion (BHI) agar. Plates were incubated at 30° C and colonies were transferred to Luria Broth (LB) agar plates. The isolates were tested for antimicrobial activity against Gram-negative Escherichia coli and Gram-positive Staphylococcus epidermidis, because drug-resistant pathogens are found in both groups of microbes. However, Gram-negative microbes are generally more resistant to antimicrobials. Strains that inhibited the growth of both organisms were chosen for further study and tested against additional pathogens: Pseudomonas aeruginosa (human pathogen), Pseudomonas fluorescens (fish pathogen), and Erwinia carotovora (plant pathogen). The results of the test showed that four strains from compost sample #1 inhibited the growth of all three pathogens. Future research will consist of the characterization of the compost isolates, DNA sequencing, and testing against other pathogenic organisms.

Herrera, Jose Luis

Institution: *TX - The University of Texas at El Paso*

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Blancas,
Jose Luis Herrera,
Manuel Morales,
Valeria Valencia,
Daniel Flores

Abstract Name: **Efficacy of Social and Physical Support for Cancer Patients**

Cancer is the second leading cause of death in the United States. In addition, cancer treatments provoke harsh side effects that demand extra strength from the patient. Cancer causes lifestyle modifications that can be detrimental on the patients' health; however, healthy habits can potentially increase the chances of a positive prognosis. Additionally, physical, and social support has proven to help patients in their fight against cancer. Since the lack of physical and social activity in patients with cancer has been shown to correlate with mental and cognitive decline, ultimately reducing quality of life, the purpose of this study is to examine the relationship between physical activity and quality of life in patients with cancer And increase their overall quality of life.This project included eight female participants that are currently struggling with cancer, or the cancer is in remission. The program consisted of group discussions, fine motor movements, and various physical activities twice a week for three weeks. Using pre/post intervention questionnaires and a dependent t-test, the significance of social and physical activities amongst the participants were analyzed. The dependent t-test showed a significant difference (t=-3.729, p=0.007) in the overall quality of life between pre and post program. These preliminary results imply that implementing a support group such as Healthy Habits that includes the use of physical and social activity, improves the overall quality of life of patients with cancer. In conclusion, the program created an additional outlet for individuals with cancer to find a relatable support group that can aid with daily struggles. Further analyses in a larger sample and with longer duration will provide stronger evidence about the relationship between physical activity and quality of life in patients with cancer.

Herrera, Joy

Institution: *PA - Lafayette College*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Joy Herrera,
Leena Shevade,
Rohan Prabhu

Abstract Name: **Design, Development, and Evaluation of Landfill Model for Education and Outreach Programs**

Landfills are currently a crucial infrastructure in modern civilization. In order to progress towards a circular economy, we must reduce our waste production and lessen the need for landfills. Despite this need for reducing waste production, little attention is given to how our trash is disposed of, once it is out of sight. Current educational efforts on waste disposal and management are centered around youth in elementary and middle school. However, little research has studied the design and assessment of physical artifacts for waste disposal and management education. The focus of this research is to determine the effectiveness of one method of educating people of various age groups on the modern engineered landfill and, in turn, encouraging them to reduce their waste production. We plan to build a physical landfill model based on WM's general landfill design. It will be small enough to be easily transported, while effectively presenting the necessary details about the operation of the landfill. We want to evaluate the effectiveness of this model in educating various age groups on modern landfills. The age groups will vary from elementary school kids up to elderly citizens. We will conduct a pre and post tests survey to assess change in knowledge of landfills and their perception of waste disposal. We will be working with the Internal Review Board to get approval for this study. We expect that after interaction with the model, the participants will improve their knowledge about landfills, and their perception of waste disposal will change positively. The results of this study can be used to improve educational strategies on landfills and waste reduction.

Herrero, Valencia

Institution: *OK - University of Central Oklahoma*

Discipline: Education

Author/Contributors:
Valencia Herrero

Abstract Name: **Differentiated Spelling and Word Study Instruction: Using Qualitative Spelling Assessment Data to Drive Instruction**

According to Tomlinson (2000), “Teachers are as different as their learners” (p.4). Vast differences among learners are the best argument for why differentiated instruction is crucial in classrooms today. If we know every individual is different, then why are so many teachers content to use one-size-fits-all teaching strategies instead of differentiating? According to researchers, many novice teachers do not feel confident to implement instructional strategies different from the status-quo, even if they believe those methodologies are more effective for students. As a result, teachers often conform to the methods already in place when they get hired. Many teachers get frustrated and change teaching positions or leave the profession completely (Allington, 2002; Darling-Hammond, 2006; Maloch et al, 2003). One of the most important teaching strategies teachers should be prepared to employ in their classrooms is differentiating for the needs of their learners.The presenter will briefly explain ways to differentiate in the classroom in general, followed by specific, research-based, differentiation methods for spelling (Cunningham, 2017; Devries, 2019; Palmer; Invernizzi, 2015). Specifically, the presenter will demonstrate how to use a qualitative spelling assessment appropriate for grades K-12to differentiate instruction in spelling, word study and phonics. The presenter will also share actual student data which has been analyzed to identify each child’s spelling stage of development. Furthermore, the presenter will share how to use the information gathered from the data analysis to provide the students with appropriate learning activities utilizing effective teaching methods.This presentation will be of interest to education majors, especially those teaching English Language Arts or working with English Language Learners. It may also interest higher ed professionals working with pre-service teachers. Attendees will learn practical strategies they can implement immediately. The session will conclude with time for questions from the attendees.

Herrin, Brendon

Institution: *IN - University of Evansville*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Riccardo Di Domenico Di Domenico *Justin Fritch* *Brendon Herrin* *Nick Gibson*

Abstract Name: **Variations in System Parameters at Low Energy Input on Thermosiphon Collector Efficiency**

A thermosiphon is a system of components that passively generates a closed cycle of flowing water wherein solar energy is stored as useful thermal energy. Systems used in real-world applications contain no mechanical or electrical components, making it useful in areas lacking capable infrastructure. Flow starts in the collector by heating the water, decreasing its density, and creating a buoyant force, which drives the fluid through a hot leg pipe into a raised tank. This heat contained in the tank could be extracted for domestic hot water heating or building supplemental heating applications. The water cools, increasing its density, and sinks down the cold leg pipe and re-enters the collector where the process continues cyclically. Thermistors, located at the collector inlet and outlet pipes, measure system temperatures and an open-bore flowmeter measures flow through the system. During steady-state, a period where flowrate, inlet and outlet temperatures remain relatively constant, collected data is used to calculate the instantaneous efficiency of the system. The discreet efficiency values are then used to calculate overall efficiency. Components of the system allow the ambient temperature around the device to be controlled, a parameter overlooked by most thermosiphon research projects. These components include insulated, removable walls enclosing the device, a fan to circulate the air inside the enclosure, and a space heater and AC unit to control the temperature. Previous research has used high-power input to the collector simulating sunny-days, but current research conducted low-power tests simulating cloudy-days to compare trends across both conditions. The base parameters that are varied and researched are collector angle, hot leg height, cold leg height, hydraulic resistance, and input power. By conducting a range of diverse test series, each investigating the effect of altering a single parameter, the team explored the effects of each system parameter on overall efficiency trends.

Herron, Christian

Institution: *IN - Indiana State University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
JUSTIN VANGILDER *Caleb Bowles* *Jeffery Buell*
Christian Herron *Isabella Leon* *Mackenzie Michael*
Lillian Moehring *Sophia Rashid* *Carter Ritzheimer*
Sandra Xique *Jennifer Latimer*

Abstract Name: **Investigating the use of crayfish as environmental water quality sentinels for metal pollution in Indiana creeks**

Ephemeral creeks and streams can be difficult to monitor and assess for water quality. Unfortunately, these same water systems can play a significant role in the input of metals and other pollutants into major waterways. Metals are often the result of nonpoint source or historic point source pollution that is no longer active, making assessment and exposure prevention difficult. An economical and reliable approach to determine water quality in these areas would be the use of reliable sentinel species that are endemic, easily identified, and respond in a quantifiably way to metals in the environment. Macroinvertebrate assemblages have been historically used to create comprehensive biotic indexes, but these indices can be complicated, seasonal, and difficult to assess without identification bias. For this project, crayfish samples, water samples, and sediment samples were collected in several creeks in Indiana representing a variety of environmental exposures. We hypothesized that because are omnivores and biotic engineers, their environmental interactions place them in a unique niche making them a reliable sentinel species. By testing and comparing the bioaccumulation of metals in crayfish tissue, water, and sediments to dominant species, average crayfish size, and population density, we can reliably predict creek health for metals. Our results determined thatFaxonius rusticus(rusty crayfish) were found in creeks with higher environmental metals. Also, crayfish cephalothorax measurements were smaller in higher metal environments. This data, along with metal bioaccumulation and biomagnification make crayfish an excellent sentinel for water quality in creeks.

Herwig, Emma

Institution: *NY - Colgate University*

Discipline: **History**

Author/Contributors:
Emma Herwig

Abstract Name: **Korean American Adoptees: A Transnational, Transracial Asian American Experience (1950-present)**

In the United States today, there are over 150,000 citizens who were born in South Korea and internationally adopted into American families, the vast majority of these families being white. While Korean American adoptees (KAAs) constitute a small fraction of the total American population, they make up about ten percent of the Korean American community. Despite their substantial numbers, KAAs are incredibly underrepresented in media and academia. This research attempts to counteract adoptees'underrepresentation by centering KAA voices and experiences in the historical narrative of the post-war relationship between South Korea and the United States and beyond. The institution of Korean-American international adoption as it is known today began with Harry and Bertha Holt in 1995 when the evangelical couple adopted eight Korean "G.I. orphans," the mixed-racechildren of Korean mothers and American fathers—abandoned by their biological parents and ostracized by their birth country. These first adoptions were heavily publicized and glorified by American and Korean media, pushing Korean-American international adoption as the humanitarian solution to the post-war influx of orphaned, abandoned, or unwanted children in South Korea. In reality, corrupt systems of bureaucracy, damaged Korean infrastructure and economy, and entitled feelings of American exceptionalism perpetuated this altruistic image of transnational adoption. In addition to the traumas of international adoption, many KAAs struggle with racial and ethnic identity formation from childhood to adulthood, commonly attributed to their white or non-Korean adoptive households intentionally or unintentionally separating them from Korean culture. Considering the significant population of KAAs in the Korean American community, this lifelong disconnect from Korean traditionsand heritage has massive implications on broader Korean American culture. Separated from their birth families, removed from their home country, and raised in racial isolation, KAAsshare a unique, distinct Asian American experience unlike any other Asian community in the United States.

Hester, Helen

Institution: *NC - Western Carolina University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
HJ Hester,
Martin L. Tanaka,
Adam C. Harris

Abstract Name: **Using a Filter and Arduino to Increase a Pump's Functionality**

The overall research project was to use mechanical and electrical engineering to create an irrigated planter box. The goal of this portion of the project was to develop a pumping sub-system that includes 3D printing a passive pump filter and programming an Arduino to prevent the pump from running dry. A replica of the pump and filter cover were created using CAD software (Onshape, PTC, Boston Massachusetts). The filter cover was designed to be slightly larger to accommodate shrinkage during printing and a layer of filter material. The cover was sliced and printed on a PRUSA Mini+. Design for Manufacturing (DFM) was also applied, which included: rotating the part 180 degrees on the roll axis and using arches to prevent the need for supporting material and post-print touchups. An Arduino UNO, ultrasonic sensor, and relay were used to control the power to the pump.The efficiency of the pump was tested with and without the filter and relay to compare efficiency. The water used in the experiment was previously filtered, so the effectiveness of the filter in removing contaminants was not tested. However, the filter did not prevent the pump from raising the water above 6 feet. The Arduino successfully prevented the pump from running dry by using an ultrasonic sensor to read the height of the water and turning off the pump when the water level dropped to a minimally acceptable value. When the pump was not connected to the Arduino it would run dry.This research demonstrates the increased reliability of a pump that is controlled by a distance sensor. A pump that is connected to a sensor can be left “ON” at all times, without the need for monitoring.

Hetletved, Nicole

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Nicole Hetletved,
Melanie Ayres

Abstract Name: **The Impact of Interactive Care With patients at End-of-Life on Healthcare Personnel's Perceptions of Life and Death and Psychological Well-Being**

Literature regarding workplace burnout and compassion fatigue among healthcare personnel and hospice workers working in end-of-life care is greatly documented in previous literature (Keidel, 2002; Potter et al., 2010; Yoder, 2010). However, an understanding of the psychological well being of hospice care and healthcare workers is underdeveloped; experiencing suffering with psychological problems is only interpreted as part of a professional requirement demanded of workers (Moreno-Milan et al., 2019). As medicine and technology advances, healthcare personnel find themselves spending more time with patients as they're actively terminally ill, yet are still able to build relationships and socialize (Viola, Leven,; LePere, 2009; Wasserman, 2008).The understanding of the development of compassion is fundamental for the quality of end-of-life care. Harper (1994), in her model of the coping mechanisms of the health professional working in hospice and palliative care, noted that feelings of experienced health professionals involve feelings of self-realization (e.g., attitudes about life and death, revaluation of interpersonal relationships) accompanied by compassion. Previous research has not examined the relationship between the development of compassion, interaction with patients, and other aspects of personal growth for healthcare personnel and hospice. The purpose of this study is to address the gap in previous literature in defining the experiences of hospice care workers, and healthcare personnel working in end-of-life care. In particular, this study sought to better understand how interactions with patients at end-of-life impact healthcare personnel’s perceptions of life and death, psychological well being, and experiences of interacting with death and bonding with the dying.

Hetsler, Madyson

Institution: ***OH - University of Findlay***

Discipline: Biology

Author/Contributors:
Cole Condon *Zach Meyer* *Madyson Hetsler*
Nathan Osborn *Jaden Humphrey* *Lauryn Steele*

Abstract Name: Monitoring Antibiotic Resistant Populations as a Correlative to Water Quality

Agricultural land use can have adverse effects on the surrounding waterways, which may cause environmental and economical disturbances including but not limited to species assemblage disruption, loss of habitat and wildlife and human health impacts. There is a need to monitor in vivo aquatic systems, specifically those in agricultural areas, to not only provide a more holistic view into the correlation between agriculture land use and aquatic environmental disruption but also to develop more succinct and effective monitoring and management guidelines. The Blanchard River serves as an excellent model system suitable for monitoring antimicrobial resistant microbe sustainability within a highly agricultural area that serves as a contributor to the Lake Erie basin. Several indicators suggest that the Blanchard River watershed may provide a suitable habitat for the antibiotic resistant microbes including MRSA (methicillin resistant S. aureus). Outside nosocomial infections, minimal research has been completed to determine the reservoirs of MRSA and other resistant microbes. One hundred and twenty-six sites within the Blanchard River and its tributaries were monitored for antibiotic resistant microbes including MRSA. All sites had antibiotic resistant populations while twenty-six of the sites harbored MRSA. Sixteen Areas of Concern (AOCs) were chosen in conjunction with the Blanchard River Watershed Partnership to determine if traditional water quality measures of E. coli concentrations,nutrient levels and macroinvertebrate populations correlate with antibiotic concentrations and resistant populations. Additionally, microcystin concentrations were measured as they are known to enhance horizontal transfer of antibiotic resistance genes. There is no correlation between land usage or antibiotic concentrations and the presence of antibiotic resistant microbes. There were weak correlations between antibiotic concentrations and pollution resistant macroinvertebrates and a weak negative correlation between E. coli levels and pollution sensitive macroinvertebrates.

Heuss, Sarah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Mathematics

Author/Contributors:
Allison Versaskas,
Sarah Heuss,
Christopher Davis

Abstract Name: Randomly Generating the Unknot

The definition of a knot in knot theory is an embedding of a circle in 3-dimensional space. Two knots are called isotopic if they can be deformed to each other without cutting or passing a strand through another. Knot theory was first introduced in the 1960s by chemists Frish-Wasserman, and biologists Delbruck-Fuller. We study a new perspective on the theory of random knots based on the universal knot diagrams introduced in a recent paper by Even-Zohar--Hass--Linial--Nowik. We ask what the probability of a randomly generated potholder knot is unknotted. A potholder knot consists of a family of knots starting with an n-by-n square grid. As the parameter n goes to infinity every knot admits such a diagram. By studying small potholder diagrams, we present some numerical evidence toward the conclusion that the probability of a randomly generated potholder knot being unknotted should be zero. We present explicit computations of the expansion of these potholder diagrams in one direction. By studying the process of randomly generating a potholder knot in terms of a Markov chain, we present forward progress towards proving this result. These preliminary results represent a work in progress.

Heutmaker, LaRue

Institution: *NY - SUNY Buffalo State College*

Discipline: **Political Science**

Author/Contributors:
LaRue Heutmaker

Abstract Name: **The World Happiness Report and Public Health**

The United Nations Sustainable Development Network has released an annual report on the statistical happiness of nation-states since 2012. Four years in a row, Finland has held first place in the UN's ranking four years in a row. Democracies hold the highest ranking each year but consistently the top five have been Scandinavian countries. This research looks to find the key differences between a top ranked and lower ranked democracies, looking at what gives these Scandinavian countries the lead. Finland, Iceland, and Switzerland are the top three democracies of 2021's report, making them the leaders in world happiness for multiple years. The following literature analyzes the political institutions in Scandinavia, America, and the United Kingdom. Key influencers are healthcare policy and reform, public health, political history, voter patterns, and occupational healthcare. Further research includes the top 46 countries on the ranking and comparing their rankings from the World Health Organization and the Commonwealth Fund's health profiles on major countries.

Hewitt, Katherine

Institution: *UT - Utah State University*

Discipline: **Biology**

Author/Contributors:
Katherine Hewitt *Amita Kaundal* *Jyothsna Ganesh*

Abstract Name: **Isolation and characterization Halotolerant endophytes of Ceanothus velutinus and their Potential as Biostimulants**

Part of a plant's biosphere are endophytes, microbes found between the cells of a plant. Plant-microbe relations are integral to plant survival and crop productivity. Endophytes can be beneficial to help a plant cope with abiotic stressors such as salinity. Climate change has increased soil salinity worldwide, and water availability is becoming scarcer, leading agriculture to use more saline sources to irrigate. Thus, salt is a concern for farmers.We aim to identify halotolerant endophytes which can benefit plant health. Microbes were isolated from Ceanothus velutinus, known as snowbrush, native to the Intermountain West region of the United States that thrives in dry and semi-arid conditions. Roots were surface sterilized and crushed, and resuspended in the sterilized water. The suspension was serially diluted, spread-plated on nutrient agar media with varying salt concentrations, and incubated at 28oC for 3-5 days.Visually unique colonies were isolated andpurified by the streak plate method and identified by 16S rRNA sequencing. They were also tested for a few plant growth-promoting traits such as; nitrogen fixation, phosphate solubilization, and production of siderophore andIAA. The literature review found that many of our bacteria are knownPlant-Growth Promoting Bacteria (PGPB), including members from the genus Streptomycetes, Pseudomonas, Anthrobacter, and Bacillus. The identified endophytes were tested on crops Medicago sativa (alfalfa) andZea mays (maize) in the greenhouse under control and saline conditions for plant growth and development. Growth characteristics such as biomass, stomatal conductance, net photosynthetic rate, relative water content, and electrolyte leakage were measured and compared. We are testing these microbes on model plantArabidopsis thaliana. Identification of plant growth-promoting halotolerant endophytes can lead to the development of biofertilizers for saline soils and be utilized as a tool in sustainable and productive crop production for these harsh environments.

Hickey, Justin

Institution: *WV - West Virginia University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Qing Ye *Justin Hickey* *Kathleen Summers*, *Brianne Falatovich* *Marieta Gencheva* *Timothy Eubank*, *Alexey Ivanov* *Nancy Lan Guo*

Abstract Name: **Multi-Omics Immune Interaction Networks in Lung Cancer Tumorigenesis, Proliferation, and Survival**

There are currently no effective biomarkers for prognosis and optimal treatment selection to improve non-small cell lung cancer (NSCLC) survival outcomes. This study further validated a seven-gene panel for diagnosis and prognosis of NSCLC using RNA sequencing and proteomic profiles of patient tumors. Within the seven-gene panel, ZNF71 expression combined with dendritic cell activities defined NSCLC patient subgroups (n = 966) with distinct survival outcomes (p = 0.04, Kaplan–Meier analysis). ZNF71 expression was significantly associated with the activities of natural killer cells (p = 0.014) and natural killer T cells (p = 0.003) in NSCLC patient tumors (n = 1016) using Chi-squared tests. Overexpression of ZNF71 resulted in decreased expression of multiple components of the intracellular intrinsic and innate immune systems, including dsRNA and dsDNA sensors. Multi-omics networks of ZNF71 and the intracellular intrinsic and innate immune systems were computed as relevant to NSCLC tumorigenesis, proliferation, and survival using patient clinical information and in-vitro CRISPR-Cas9/RNAi screening data. From these networks, pan-sensitive and pan-resistant genes to 21 NCCN-recommended drugs for treating NSCLC were selected. Based on the gene associations with patient survival and in-vitro CRISPR-Cas9, RNAi, and drug screening data, MEK1/2 inhibitors PD-198306 and U-0126, VEGFR inhibitor ZM-306416, and IGF-1R inhibitor PQ-401 were discovered as potential targeted therapy that may also induce an immune response for treating NSCLC.

Hickman, Emma

Institution: *IA - Wartburg College*

Discipline: Biology

Author/Contributors:
Emma Hickman,
Ashton Camper

Abstract Name: **The Study of a Bacteriophage on the Wartburg College Campus**

Bacteriophages are viruses that only infect bacteria and are also known as “phages” for short. Soil samples were collected on Wartburg College campus in hopes of findingphages in the soil samples. The goal is to get an image of the phage, analyze its genome, and DNA it contains to further understand how it works. Phages were isolated near a pipe located next to the science center. The coordinates were 42°43'37''N 92°28'59''W. After retrieving the soil sample, the phage particles had to be isolated from the soil sample. Novel bacteriophages were isolated via direct and enriched isolation at 30oC on PYCa medium. Once plaques were found, picking a plaque, plaque assays, serial dilutions, webbed plates to form lysate, and spot test could be performed. A plaque is what a phage forms after being transferred to a plate that contains bacteria. They appear as blank spots on the plate that can range from a few to many, and small to large. Plaque assays dilute a plaque picked from serial dilutions to purify it. Serial dilutions help manipulate concentration of phages in a sample. After making a plate that had many plaques, the next step was to generate a concentrated phage solution or lysate. The lysate that was extracted helped obtain the phages’ DNA and store it for a longer period of time to help with later parts of the experiment which includes sequencing. Next, phage samples were mounted for TEM by negative staining them. The purpose of this is to prepare a phage sample for viewing with a TEM. As stated in the beginning of this abstract the goal is to identify and characterize a novel phage.

Hicks, Riley

Institution: *KY - Morehead State University*

Discipline: Education

Author/Contributors:
Riley Hicks

Abstract Name: **Are Gender and Social Disparities Associated with STEM Persistence in Kentucky Colleges?**

Background: Even though children in the U.S. have the right to receive a quality education, concerns about disparities in school funding, facilities, and resources between different counties within a state have emerged. This "zip code effect" causes some students to be "predestined" to receive a poor foundational education depending on their home address. Because high school science and mathematics (STEM) classes require lab space, materials, equipment, and specialized teachers, disparities in school funding can impact students who want STEM careers. To make matters worse, once in college, female students are less likely to declare a STEM major and persist in it until graduation, especially in quantitative fields. Methods: The researcher analyzed data from the Kentucky Department of Education and Morehead State University. Chi-square and ANOVA tests were performed to determine factors affecting STEM degree attainment depending on whether students declared and graduated from the same STEM major (Major Persisters, n = 358), declared but switched to a different STEM major (STEM Persisters, n = 353), or switched from the original STEM major and graduated in a nonSTEM major (STEM Departers, n = 290). Results: The researcher found that low-income students are significantly less likely to be Major Persisters or STEM Persisters, and significantly more likely to be STEM Departers (X2 = 13.81, p = 0.001). Male and female students were Major Persisters, STEM Persisters, and STEM Departers at similar rates (X2 = 0.88, p = 0.64), which suggests a welcoming college environment for women in STEM. Average school size and funding per pupil were also similar for the three groups of interest (F = 0.38, p = 0.68; F = 0.35, p = 0.70). The fact that STEM-interested Pell Grant receivers are more likely to be STEM Departers calls for increased support through targeted financial aid and academic assistance.

Hidalgo, Micaela

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: Nursing/Health Science

Author/Contributors:
Micaela Hidalgo

Abstract Name: **Expression profile of selected DNA damage repair genes in Saccharomyces cerevisiae exposed to arsenic (III) oxide.**

DNA damage response is composed of multiple intercellular mechanisms capable of repairing impaired DNA sequences in order to prevent mutation spread. Various genes and pathways may be activated depending on the specific type of damage induced by a genotoxic agent. Among other factors, arsenic present in the form bioavailable compounds can act as an environmental pollutant and hazard to human health due to its mutagenic potential. This study utilizes aSaccharomyces cerevisiaemodel to investigate which DNA repair genes are activated in response to arsenic (III) oxide exposure. We herein apply previously optimized conditions of an arsenic (III) oxide treatment which results in moderate cellular toxicity (IC45-70, approximately 10.0% mortality). Expression of 20 different genes with a known role in either base excision repair, nucleotide excision repair, mismatch repair, homologous recombination or non-homologous end joining is examined using Real Time-quantitative Polymerase Chain Reaction (RT-qPCR). We anticipate that comparative analysis of arsenic-treated vs. untreated cells will demonstrate a distinct expression profile for genes involved in different DNA repair mechanisms.

Hijazi, Maryah

Institution: *MN - St. Catherine University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Anna Wolff,
Maryah Hijazi

Abstract Name: **The Evolution of Prominent Female Figures in Fashion of the 1900s**

Fashion is evolving and ever-changing. While fashion includes everyone, it is a practice that predominantly highlights and affects women. Despite this, there is a gap in literature on the representation of women who have influenced fashion. Our research aims to trace the development of styles, forms of dress, and appearance in relation to changing social, cultural, economic, technological, environmental, and political factors in the Western world while highlighting prominent female figures who helped make these changes in the 20th century.To explore this topic further, we first conducted a content analysis using scholarly publications and books to identify prominent female figures of the 20th century. We researched the historical climate of each of these decades, then selected female figures who represented these decades and their respectful fashions. After analyzing each decade, we focused on four decades, the 1920s, 1940s, 1960s, and the 1980s. The women identified include Greta Garbo, Marlene Dietrich, Jacqueline Kennedy, Twiggy, and Madonna. Greta Garbo and Marlene Dietrich were actresses of the 1920s and 1940s who influenced women to move away from cultural norms of dress; Twiggy and Jacqueline Kennedy. were prominent figures of the 1960s who showcased the polarized climate of the time, and Madonna was a singer who was known for her rebellious image in the 1980's. We then conducted an artifact analysis of styles and silhouettes of clothing from the 20th century using the historic dress collection at St. Catherine University in St. Paul, Minnesota. This collection contains over 2,000 garments and accessories dating back to the 1850, which provides evidence of silhouettes of the past. The findings of this research fill a gap in the literature and highlight women's accomplishments and fashion influence throughout the decades. These Findings will be presented in a visual window exhibition at Saint Catherine University.

hildebrand, Kirsten

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Gabrielle Hildebrand

Abstract Name: **Effects of Residual Arousal on Cognitive Appraisal and Psychophysiological Reactivity to Stress**

Effects of Residual Arousal on Cognitive Appraisal and Psychophysiological Reactivity to Stress When faced with a performance task, individuals may experience a cardiovascular reaction characterized by increased heart rate, sweating, and shaking. There is continued investigation of emotional, physiological, and psychological responses to performance tasks. While past research has found generalized energy expenditure to amplify emotional responses to a target stimuli, the question remains whether predispositions also modify emotional responses. This study investigated how residual arousal after exercise affects psychological and physiological reactions to a performance task, when individual appraisals of the task differ. Participants reported a positive or negative attitude toward job interviews in a pre-study questionnaire and underwent either a highly or minimally arousing exercise task, followed by a mock job interview, to which self-reported and cardiovascular responses were assessed. Using the Biopsychosocial Model of Challenge and Threat (BPSM–CT) as a framework, results showed that during the interview, participants with positive and negative prior attitudes exhibited cardiovascular response patterns consistent with the (BPSM-CT), while residual arousal from exercise led to more positive self-reports of the interview in both groups. In regard to cardiovascular reactivity, it was hypothesized that participants in the positive attitude group would exhibit more challenge-like cardiovascular reactivity to the task, defined as increased HR, increased CO and decreased TPR from baseline, while those in the negative attitude group would exhibit more threat-like reactivity, defined as increased HR, unchanged CO, and unchanged TPR. The findings demonstrate that residual arousal can improve subjective evaluations of a performance task, while pre-existing attitudes can influence task-related physiological reactions. This study is continuing to collect and analyze data in order to determine whether results differ with more participants. Further, this study contributes to a field of research exploring physiological, psychological, and emotional responses and reactions to stress and performance tasks.

Hilderbrand, Emily

Institution: *MN - Hamline University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Emily Hilderbrand

Abstract Name: Beyond The Church: Religious Expression and Parallels in Popular Film

This paper seeks to examine religious themes, expressions, and parallels in popular American films, in order to examine not only what narrative elements resonate with Americans, but how religion embodies these elements. While much has been written in recent years about film and religion, many of the studies have centered around explicitly religious films or the spiritual experience that one may have while watching a film. This project, on the other hand, examines how the most popular American films of the last 60 years engage religious themes as the percentage of Americans who identify as religious continues to decline. Scholars have recognized that as fewer Americans identify as religious, more and more Americans are turning to alternative sources for forms of spiritual fulfillment. To better understand these new spiritual mediums, such as film, it is necessary to consider what themes are present in popular films. All the films analyzed in this project are from top 15 films from IMDb.com, omitting franchise repeats. While it will not be the focus of the paper, overtly religious films were also watched and compared to the IMDb top 15 to examine how these genres vary in their treatment of religious themes. Through these analyses, I find that these films have at least three key themes with religious dimensions;the destruction of corruption, the inspiration of hope, and empowerment of the individual. As people begin to desert organized religion, film is increasingly filling the gap left by the perceived failings of religious institutions.

Hill, Lauren

Institution: *NC - Elon University*

Discipline: Mathematics

Author/Contributors:
Thomas Wilson *Lauren Hill* *Mary Hermes*
Griffen Pace *Hwayeon Ryu*

Abstract Name: Mathematical Modeling of Immune Response to SARS-CoV-2

In response to the profound impact the COVID-19 pandemic has had on society, the mathematics and broader scientific community has focused considerable research efforts to understand the spread of the virus. Despite a tremendous volume of research in this area, how the human immune system responds to SARS-CoV-2 has not been yet fully understood due to limited analysis of the experimental or clinical information to date. Mathematical models that account for the interaction between SARS-CoV-2 and the human immune system will improve the scientific community's ability to analyze the vast amount of data available. The model we developed helps in understanding the role of various molecular pathways in successful viral clearance and the key mechanisms responsible for disease severity exhibited by some patients. Specifically, our in-host model explicitly represents the virus, innate immune cells, selected cytokines, and their interactions. These interactions are formulated in a system of coupled ordinary and delay differential equations. We conduct parameter estimation based on experimental data and literature review and investigate qualitative and quantitative behaviors of the model via numerical simulations. Using this model, we then determine the implications of variation of parameters by sensitivity analysis. Our model demonstrates key aspects of immune response to SARS-CoV-2, specifically its sensitive pathways, which might be responsible for differences in disease severity exhibited by COVID-19 patients. Our preliminary results of the mechanisms involved in COVID-19 pathology could identify several therapeutic targets that would provide hypotheses to be tested clinically, thus, serving as a foundation for the development of evidence-based therapeutic strategies.

Hill, Mackinzi

Institution: *NE - University of Nebraska at Kearney*

Discipline: Chemistry/Materials Science

Author/Contributors:
Mackinzi Hill,
Katie Lytle

Abstract Name: **Serotonin N-acetyltransferase Inhibitors for Treating Circadian Rhythm Disorders**

Circadian rhythm (CR) dysregulation contributes to mental health disorders, including major depressive disorder (MDD), bipolar disorder (BD), and seasonal affective disorder (SAD). Melatonin has been strongly associated with CR, but despite years of research, many questions remain regarding its role and how it influences mood. The rate-limiting step in melatonin synthesis involves the enzyme serotonin-N-acetyltransferase (SNAT, AANAT). Inhibition of SNAT would be a valuable approach for studying the physiology of melatonin and could be used to treat disorders such as SAD that involve abnormally high melatonin. Published inhibitors have problems with cell permeability, selectivity, and/or potency, which have prevented advancement to testing in humans. We have applied X-ray crystal-based models to modify a previously described indolinone scaffold with polar substituents as well as aromatic rings for conformational restriction to improve interactions with the Coenzyme A (CoA) binding site of SNAT. The synthesis and structure-activity relationship (SAR) from an enzymatic assay of these new indolinone-containing inhibitors will be presented. Our results could lead to a better understanding of SNAT's function and provide an approach to regulating melatonin.

Hill, Madison

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Shelby Sanders,
Haylee McMurry,
Madison Hill

Abstract Name: **Limited Access to Rural Community Schools**

Sensitive topic agencies have limited access into the education system and are unable to inform school aged children on sensitive topics. Due to the limited ability agencies who facilitate sensitive topic programs contain in the rural community school systems, student researchers introduced a question pertaining to the issue. How do educators in rural communities perceive agencies who facilitate sensitive topic programs? This study aims to understand factors related to sensitive topic agencies. Through a survey, the student researchers collected mixed-methodological data with a concentration on quantitative data. The overall targeted sample size was 75 educators who have worked in rural community school systems. After speaking with individuals, researchers can reach out to schools as a whole. They can practice at a mezzo level by contacting the school about what individuals inside their facility believe is appropriate to be taught to the students. Reaching out to the school can allow researchers to obtain an approved number of topics that are allowed to be presented to the age group indicated. This will then allow agencies to provide some information regarding sensitive topics to schools. In terms of the macro level, agencies often branch out into counties. The student researchers found that a majority of female participants did report a positive perception of sensitive topic agencies, and male participants reported limited knowledge. They also found that age did not matter when looking at the perceptions the educators have on sensitive topic agencies.

Hill, Makenna

Institution: ***OK - Cameron University***

Discipline: English/Linguistics

Author/Contributors:
Makenna Hill

Abstract Name: Cracking The Code of Jane Austen's Masculine Femininity

Jane Austen is a feminist writer who questioned women's motivations for marriage in her lifetime. Austen's personification of reasoning applied by female characters in her novels challenges the societal expectations of women through her justifying that women can be more than emotional paperweights.Her characters such as Elinor Dashwood in Sense and Sensibility and Elizabeth Bennett in Pride and Prejudice fight against the stereotype of women in their time by presenting "masculine" actions and thoughts and by confronting the institution of marriage during that time. The author of this paper argues that Austen has created Elinor and Elizabeth to bring traditional gender roles into question while renewing awareness about marriage standards that many women held in her time. And the author maintains that the themes reflected in Jane Austen's novels are also significant for today in thatcontemporary women are still facing both similar and different challenges from society as the women in Austen's time.

Hill-Scanlan, Chyna

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Psychology/Neuroscience

Author/Contributors:
Chyna Hill-Scanlan,
Barbara Beaver

Abstract Name: The Acceptability of Mindfulness-Based Approaches Among African American Young Adults

The present study examines mindfulness, preferred coping methods, and the perceptions of mindfulness-based interventions (MBIs) on mental health conditions. Furthermore, this research explores gender differences and how the role of religion impacts the perceptions and acceptability of mindfulness. Additionally, the study provides suggestions from previous studies on ways to enhance mindfulness-based interventions tailored for African American communities, which could potentially increase the acceptability of mindfulness practices. African American students ages 18-25 from the University of Wisconsin-Whitewater are included to fill gaps in the research on mindfulness and African Americans.

Himmel, Kennedy

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Education

Author/Contributors:
Kennedy Himmel

Abstract Name: **A Generation of Revenge: An Analysis of Far-Right Youth Radicalization and Holocaust Education in the US Education System**

This study is a comprehensive look at dissident right (far-right political ideologues, including white nationalists, fascists, and National Socialists) attitudes regarding the United States' education system. From the testimonials, literature, and words of members of the dissident right, this study finds that how problems in civic and Holocaust education are taught in schools may contribute to far-right political radicalization. Utilizing qualitative research methods, this study offers an analysis of far-right attitudes regarding the US education and Holocaust education from the words and works of dissent right political actors themselves. The methods of this comprehensive analysis include observation of online dissident right communities and reviews of dissent right media and literature (including books, articles, blogs, social media posts, memes, and podcasts). This survey of dissident right attitudes has found that these political actors commonly identify the role of the United States' education system as contributing to helping them develop their extremist ideology. Specifically, with subjects frequently identifying their experiences and dissatisfaction with Holocaust education as being part of their ideological radicalization. This study hopes to identify intersections between the US education system, civic and historical education, trends within American political culture, and the dissident right in order to better understand far-right youth radicalization.

HInden, Jenna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Allison Urbanski,
Jenna Hinden

Abstract Name: **WRAPping Our Heads Around the Impact of Advertisements Near Schools**

The aim of this research project is to generate evidence surrounding the type and amount of advertisements displayed by alcohol/tobacco retailerswithin a one-mile radius of nine high schools in Eau Claire County. This project specifically centers on surveyingthe advertisements of alcohol, nicotine-containing products, and processed foods on the property exteriors(including gas pumps, bollards, entry doors, exterior facing windows, etc.). Studies showthat adolescents are exposed to alcohol advertisements on a daily basis which impacts consumption and drinking habits, as well as the vulnerable developing brain. The U.S. Surgeon General reported that the use of e-cigarettes is on the rise among adolescents and continues to be a public health concern. For this population, close proximity between schools and retailers who sell and advertise junk foods is largely associated with higher consumption rates of these same foods. Based on concerns from Eau Claire County high school students and administrators, amodified survey from the Wisconsin Retail Assessment Project (WRAP) will be utilized to identify the content and quantity of advertisements near local schools. The project outcome involves the creation and dissemination of an original, interactive, and evidence-informed presentation created to inform public health and city officials who then have the opportunity to use the data to affect signage. The results have yet to be determined, but it is predicted that a majority of retailers near Eau Claire County high schools advertise alcohol,processed foods, and nicotine-containing products. This in turn increases accessibility, affordability, and acceptance of further product usage in adolescents.

Hinojosa, Zenetta

Institution: *TX - The University of Texas at San Antonio*

Discipline: Psychology/Neuroscience

Author/Contributors:
Zenetta Hinojosa *Bethany Cruz* *Kelsie Allison*, *Hannah Sheikh* *Alan Meca*

Abstract Name: **Examining the Role of Acculturation Pressure on Affirmation and Belonging in Minority Populations**

Substantive research has indicated that Hispanic/Latinx youth are at greater risk for internalization symptoms, such as depression (Substance Abuse and Mental Health Services Administration, 2019). Prior research has tied social acculturative stress to increased depression and suicidal ideation among Latino youth (Gomez; Miranda, 2011), yet limited studies have examined how these pressures impact cultural identity development. Given that the effects of acculturative stress on psychopathology likely operate through its negative impact on normative developmental processes (Oshri et al., 2014), establishing the mechanisms of acculturative pressures would provide insights regarding the detrimental impact.Addressing the gaps in the current literature, the proposed study sought to explore how acculturative stress, specifically, pressure for and against acculturation, contributes to ethnic/racial (ERI) and U.S. identity (USI) in a large sample of young adults. The current sample consists of 1340 students (75.5% = Female; Mage = 19.92 years, SD = 2.09) drawn from a multisite university study on identity and culture. We estimated a linear regression model to examine the effect of pressure for and against acculturation on ERI [F(4, 1335) = 68.430, .001] and USI [F(4, 1332) = 23.261, .001]. As indicated in Table 1, pressure to acculturate was positively associated with ERI (β= .45, .001), whereas pressure against acculturation was negatively associated with ERI (β= -.43, .001). Additionally, pressure to acculturate was negatively associated with USI (β= -.27, .001). USI was also positively associated with pressure against acculturation; however, this association was not significant.Interestingly, the decrease in USI paired with higher acculturation pressures suggests a negative, reactionary response. This converse outcome implicates the need for further exploration and understanding on cultural identity development.

Hintermeister, Julia

Institution: *MN - Hamline University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Julia Hintermeister, *Destiny Yang*

Abstract Name: **Water Treatment by Cold Atmosphere Plasma**

The purpose of this project was to quantify and investigate the mechanisms used to degrade perfluorooctanoic acid (PFOA), an emerging contaminant, through exposure to an electrically charged tungsten electrode to water discharge cold-atmospheric pressure (CAP) plasma jet. PFOA was commonly used in man-made products for commercial, industrial, and firefighting purposes, which had led to widespread contamination of groundwater and drinking water. CAP is an emerging technology undergoing intense research to understand what reactive species are produced during experimentation and how it can be used as an effective system for water treatment. A 20 micromolar solution of PFOA was exposed to plasma ignited in both air and argon gasses at a wattage of 10 ± 1 W. Under these conditions,a substantial amount of PFOA degradation occurred with argon and air plasma treatments in positive polarity. PFOA was seen to degrade an average of 54.6% when using an argon gas feed, and 50.0% when using an air gas feed after 40 minutes of treatment. These results indicate that argon plasma is a better conductor for the removal of PFOA from contaminated water. Additionally, CAP does not require expensive or wasteful resources, and does not generate harmful by-products. This project demonstrates that CAP is a promising green alternative to current water treatment processes in use.

Hiramatsu, Yuki

Institution: ***JPN - Musashino University***

Discipline: Mathematics

Author/Contributors:
Yuki Hiramatsu,
Momoka Umeda,
Shota Nakayama

Abstract Name: Taxiway Optimization for Runway Duplication at Fukuoka Airport

1. Purpose of the Study. Aviation demand, which declined during the COVID-19 pandemic, is expected to fully recover to pre-pandemic levels by 2023 and continue to further increase. Therefore, there is a need to improve the efficiency of air traffic control in addition to airport capacity. Particularly, congestion among aircraft is an important problem. In recent years, NASA and the FAA have initiated research on this topic to improve the efficiency of ground transfers and departures at airports. Fukuoka Airport has one of the highest congestion levels per runway in Japan, and the resulting delays in takeoffs and landings constitute a major issue. Therefore, we aim to reduce emissions by optimizing routes, operating taxiways at regular intervals, and reducing stop zones. 2. Methods and Results. Using Dijkstra's method and Queueing theory, we identified the shortest taxiway routes, constructed a program to head to an open runway while maintaining constant intervals, calculated the optimal time for aircraft departing the boarding gate and the associated delay time, and constructed a new takeoff and landing timetable. 3. Discussion and Conclusions. Airports judge on-time departure or arrival of a flight to have failed in case of delays exceeding 15 min. In 2021, Fukuoka Airport exhibited an on-time departure rate of 95.74% and an on-time arrival rate of 96.05%. This study accomplished 100% on-time departure and arrival rates, assuming that all passengers arrive on time. Furthermore, the program completely prevents traffic congestion on the taxiway, allaying anxiety in passengers over delays in take-off, as it is designed to maintain a constant interval between different runways. In addition, aircrafts are not required to halt on the taxiway in the proposed system; this considerably reduces exhaust emissions by diminishing energy expenditure.

Hlaing, Thu Thu

Institution: ***FL - Florida Institute of Technology***

Discipline: Mathematics

Author/Contributors:
Thu Thu Hlaing,
Jonathan Webb,
Edmund Robbins,
Nezamoddin Nezamoddini-Kachouie

Abstract Name: Generalized Additive Models for Modeling the Mountain Glacier Terminus Variations in Response to the Climate Factors

Populations residing in arid regions, typically near mountains often depend on run off from melting glaciers for their water during the drier and warmer parts of the year. River systems meandering through portions of Asia are sustained from ice and snowmelt located in the Himalayas and the glaciers within the mountain range, this is particularly true in late summer when a predominant factor contributing to river flow comes from melting glaciers. Much the same is true in the Andes in South America. The socio-political impacts due to the loss of mountain glaciers have the potential to be significant on both the ecological and global political level. The recognition of these contingencies has spurred increased interest into the study of the mountain glacier response to the measurable evidence of fluctuating climate factors such as temperature, precipitation, and CO2.The remote nature of glaciers renders direct measurement impractical on anything other than a local scale. This project uses satellite imagery, taken by Landsat at regular intervals. The goal of this project is to quantify changes in the terminal point of Franz Josef and Gorner glaciers in response to climate factors. Generalized additive models (GAM) are employed to identify significant climate factors that can explain and predict variations in the terminal point of these glaciers. Local temperature, CO2, and precipitation are identified as significant factors for predicting changes in the movements in the terminal point of Franz Josef and Gorner glaciers.

Ho, Diana

Institution: *VA - Virginia Commonwealth University*

Discipline: Political Science

Author/Contributors:
Diana Ho

Abstract Name: **Donald Trump, Right-wing Populist Rhetoric, and the Antagonization of Left-wing Parties in Political Discourse: The Relationship Between Trump's Speeches and Tweets and Political Demonstrations in the United States**

With the recent emergence of political discourse, politicians and their rhetoric, especially former U.S. President Donald Trump, has been labeled as populist in explanation for the mobilization of their supporter base. Opponents have characterized Trump's populist rhetoric as aggressive, antagonistic, and insulting. By examining Trump's right-wing populist rhetoric through a textual analysis of Trump's rally speeches and tweets from 2016 to 2021, the study investigates the relationship between Trump's populist rhetoric and political demonstrations and violence in favor and against Trump. The study determines the degree of Trump's populist rhetoric according to a criteria adopted from scholars—with an emphasis on dispositional blame attribution and anti-elitism—and a textual comparison to other right-wing populist politicians, such as President Jair Bolsonaro and Prime Minister Thaksin Shinawatra. Since the aim of populism is based on stripping the elite of power and returning it to the common people, populist rhetoric may utilize personal pronouns such as "we" and "our" and inclusive language such as "the people" in order for a politician to relate to their supporters. The study parallels Trump's rhetoric in tweets—which includes personal pronouns and inclusive language—to a timeline of protests that transpired from late January to early February 2017. Although the study found that there is a need for additional research to determine a causal relationship between Trump's right-wing populist rhetoric and demonstrations in favor and against Trump, studies have found that political demonstrations are correlationally related to populist rhetoric.

Hoelscher-Hull, Emory

Institution: *MT - Montana State University*

Discipline: Public Health

Author/Contributors:
Emory Hoelscher-Hull

Abstract Name: **Cumulative Risk Assessment of Well Water Contaminants in Gallatin and Madison Watersheds, Montana and Formulation of Risk Communication Plan**

Access to safe drinking water is an issue most Americans associate solely with developing counties, however, many rural Americans rely on private drinking water sources that may not be tested or treated for contaminants that pose a risk to human health. Unlike public water supplies, private drinking water (PDW) is not regulated by the Environmental Protection Agency. Instead, the testing and treatment of well water is left up to well owners who may not be aware of potential contaminants present in their water or the health effects associated with these contaminants. Educating well owners is an important step in protecting the health of rural Montanans. This project seeks to communicate the cumulative risk posed by the consumption of home well water, and a high-level idea of what contaminants are likely to be present in well water in the Gallatin watershed (home to Montana State University) and neighboring Madison watershed. The objectives of this research project included: (1) calculating the cumulative risk posed by lifetime consumption of home well water for residents living within the Gallatin and Madison watersheds in Montana using available data from the Ground Water Information Center, and (2) conducting a literature review of existing risk communication best practices and formatting a guide for other researchers at Montana State University communicating well water research. This information will be used to create a 1-page flyer and other educational materials for public health officials and residents of Gallatin and Madison counties. These materials will communicate a high-level idea of what contaminants are likely to be present in residents' well water based on their watershed of residence, and will emphasize the importance of well water testing. They will be shared with local health departments and will be made available on the Montana State University extension program Well Educated website.

Hoff, Lou

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Biology

Author/Contributors:
Lou Hoff,
Rebecca Fudge,
Julie Grossman

Abstract Name: **The Effect of Cold Temperatures on a Common Cover Crop Rhizobia Used in Organic Agriculture**

Nitrogen is an essential nutrient for plant growth, but it can be limiting in agricultural systems. Legumes meet this nitrogen demand by partnering with rhizobia soil bacteria to fix atmospheric N2 into a plant-available from. This study focuses on Rhizobium leguminosarum biovar viciae (Rlv), the rhizobia associated with the winter annual cover crop, Vicia villosa Roth (hairy vetch). This crop can be planted after cash crop harvest in the fall, grown through the winter, and contribute fixed nitrogen to a subsequent cash crop. This contribution of nitrogen is done through both the decomposition following termination of cover crop as biomass decomposes and biological nitrogen fixation (BNF) by rhizobia. Due to its late planting dates of the upper Midwest and other cold regions, hairy vetch must fix nitrogen under cold stress conditions. This study analyzes the growth rate of five strains of Rlv, to determine whether in vitro growth at low temperatures reflect improved BNF rates with hairy vetch grown at low temperatures. Strains were grown at 8, 12, 16, 20, and 28 degrees ℃, with optical density of the rhizobia measured at set time points. We hypothesized that the rhizobia strains with previously documented low BNF in trials with vetch would also have low growth rates at low temperatures. Indeed, the strains that performed the worst in vitro were also the strains that performed the worst in planta at low temperatures. These results suggest that testing rhizobia strain growth in vitro at low temperatures is an inexpensive alternative to testing strains' BNF capacity with hairy vetch grown at low temperatures.

Hoff, Rhoen

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rhoen Hoff,
Piseis Proia,
Jeanette Bennett

Abstract Name: **The Relationship Between Racial Discrimination and Mental and Physical Health Among College Students**

Racial discrimination is associated with poorer mental and physical health outcomes. Even in spaces meant to improve health, minorities can experience the opposite. For example, situational discrimination, such as in the healthcare setting, has been reported more frequently among racial minorities and is associated with unmet healthcare needs and a greater likelihood of delaying healthcare until condition severity meaning poorer health outcomes. This study's purpose is to examine if experiences of racial and healthcare discrimination are linked to negative mental and physical health outcomes among college students. Students enrolled at UNC Charlotte (n=279) were recruited to complete an online study about being treated unfairly and health. Lifetime experiences of perceived racial discrimination were measured through the Schedule of Racist Events (SRE) scale. Mental and physical health outcomes were assessed through validated and reliable self-report questionnaires including the Cohen-Hoberman Inventory of Physical Symptoms (CHIPS), Center for Epidemiologic Studies-Depression (CES-D), and Perceived Stress (PSS) scales. Experiences of healthcare discrimination will be estimated by averaging two health-setting specific items from the Experiences of Discrimination and SRE scales. Self-reported racial discrimination was positively correlated with healthcare discrimination, depression, negative physical health, and perceived stress. Healthcare discrimination was positively correlated with depression, negative physical health, and perceived stress. Racial minorities reporting higher rates of racial discrimination and healthcare discrimination are more likely to report greater stress, depression, and poorer physical health.

Hoffman, Courtney

Institution: *GA - Georgia Institute of Technology*

Discipline: **FAN Abstract**

Author/Contributors:
Courtney Hoffman

Abstract Name: **Effects of Class Size on Undergraduate Research Thesis Writing Success**

Writing Studies experts generally agree that small class size leads to the most efficacious writing pedagogy. While this practice has been widely studied with regard to first-year writing classes, very little work has been done to consider whether upper-level writing classes are similarly affected. Determining an answer to this question presented an opportunity for study with a growing need for seats in the 2-part writing course series (Undergraduate Research Proposal Writing and Undergraduate Research Thesis Writing) that is a requirement of Georgia Tech's Undergraduate Research Option, a need that could be remedied with by offering class sections with a larger seat cap. The larger class was piloted, allowing students to enroll in either a small class with a cap of 15 students or a large class with a cap of 40 students for both the proposal and the thesis writing classes. Student writing samples were assessed in order to test the generally accepted understanding of class size and writing pedagogy. Experts in writing instruction evaluated randomly selected and anonymized proposals and theses, focusing on measures such as defining the problem, solution, and benefits of the research; clarity; organization; and citational practice. Average scores of the students in the smaller classes were compared to those in the larger classes. No significant difference in student writing efficacy was found. This presentation discusses the assessment project, course design, and the research option more broaadly, with the hope that similar models might be of use at other institutions.

Hoffmann, Eric

Institution: *VA - Virginia Polytechnic Institute & State U*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Eric Hoffmann *Shima Shahab* *Ahmed Sallam*

Abstract Name: **Investigation on Acoustic Holographic Lenses for Low Intensity Transcranial Neuromodulation**

Chronic pain is a debilitating condition that is an enigma for both doctors and their patients. The CDC estimated that 20.4% of US adults experience chronic pain which imposes tremendous burdens on the healthcare system and can severely affect a patient's quality of life. The most common form of treatment is medication, though it often comes with undesired side effects. Neuromodulation is an emerging tool for the treatment of chronic neuropathic pain by altering the nerve activity through the targeted delivery of a stimulus. This presentation will discuss the alternative therapy known as tFUS, or transcranial focused ultrasound. tFUS is a new and promising non-invasive technique for safely inducing transient plasticity deep within the brain by sending ultrasound pulses with high spatial precision and depth. In this work, a 3D printed holographic lens is designed using time-reversal and phase conjugation techniques to compensate for skull aberrations as well as target the ventral posterolateral nucleus (VPL). We verify our work using numerical simulations and submerged experiments using a 3D printed skull phantom. Firstly, computed tomography (CT) and magnetic resonance (MR) images are used to obtain the geometry and the acoustic properties of the skull. Simple thresholding is used to infer the skull geometry from the CT images. On top of the previously established skull domain, additional segmentation is done on MR images to derive the geometry of the skin, cerebrospinal fluid, and brain tissue. Secondly, by utilizing the acoustic simulations toolbox “k-wave” the lens is designed using time-reversal techniques that account for the inhomogeneities in the propagation medium and the skull. Developing accurate physical models is essential for providing patients with fast and personalized therapeutic procedures without the need for any invasive interventions. Finally, experiments in a water tank are performed to verify our numerical and computational findings.

Hogan, McKenna

Institution: ***UT - Weber State University***

Discipline: Public Health

Author/Contributors:
Jennifer Nava,
McKenna Hogan,
Braydon Pesnell

Abstract Name: Discrepancies Between Cleaning Procedures in Medical Settings Regarding Clostridioides difficile Prevention

Clostridioides difficile (C.diff), a common healthcare-associated infection (HAI), is a gram positive bacteria that causes life-threatening diarrhea (12,800 deaths in the US in 2017) especially in immunocompromised individuals. Patients who receive extensive broad-spectrum antibiotic treatment develop this infection and it is highly contagious in clinical environments. Despite it being primarily spread through exposure in medical settings, there are no standardized procedures between facilites on sanitizing surfaces after coming into contact with a patient who is positive for C.diff. The goal of this research is to compare cleaning procedures and determine which is most effective at killing C.diff on surfaces as it survives common disinfection due to sporulation. Surveys will be sent to various medical facilities nationwide inquiring about patient history, cleaning techniques, and follow up testing to see if the C.diff spores were eradicated. Following their responses, each procedure will be evaluated on its efficacy to eliminate spores based on CDC guidelines. After the research is performed, it will be evident by the variation of C.diff isolates between regimens that some policies are superior to others and there should be standardization between healthcare facilitesto better prevent the spread of severe HAIs.

Hojnacki, Sophia

Institution: ***MT - Montana State University - Bozeman***

Discipline: Public Health

Author/Contributors:
Sophia Hojnacki,
J. Mitchell Vaterlaus,
Tasha Shaffer

Abstract Name: Examining Perceived Interpersonal Relationship Influences on Physical Activity Across the Life Course

The United States has a growing aging population. By 2034, it is predicted that there will be more older adults than children. Physical activity and interpersonal relationships across the lifespan contribute to quality of life. Less is known about how interpersonal relationships influence physical activity. The current study aimed to understand how older adults perceived interpersonal relationships influenced their early life (under age 18), young adulthood (ages 18-34), middle adulthood (ages 35-59), and older adulthood (ages 60+). Participants included 19 older adults (n= 8 men,n= 11 women) between the ages 60 and 83 (mage= 68.9) who were recruited in one community in the western United States. Each participant completed a 50–60-minute audio-recorded interview. Participants were asked questions about their physical activity and interpersonal relationships at each stage of their lives. Interviews were transcribed verbatim. A qualitative case study analysis approach was utilized. Participants' experiences with physical activity and interpersonal relationships across the lifespan were represented by four themes: (1) Exercise trajectory across the lifespan (e.g., types of physical activity at different life stages, perceived personal health), (2) Relationships with parents, siblings, and extended family (e.g., largely focused on how early interpersonal relationships influenced perceptions and experiences with physical activity), (3) Chosen relationships and physical activity (e.g., romantic partner and friend influences on physical activity), and (4) Children, grandchildren, and physical activity (e.g., difficulty exercising when children were young, children and grandchildren as a motivator for exercise).Results will be discussed in relation to existing literature and theory, and future research directions will be provided.

Holck, Addison

Institution: ***WI - University of Wisconsin-Superior***

Discipline: Chemistry/Materials Science

Author/Contributors:
Addison Holck Holck

Abstract Name: Is Nile Red an effective tool in the identification of microplastics?

The extensive use of plastics in both industry and commerce has led to the introduction of plastic debris in natural environment. Some of these plastics are fragmented and in turn generates microplastics (MPs) are then being introduced into lakes and rivers. MPs (< 5mm in size) are produced from microsized fragments on account of disposal and decay of plastics. Extensive research has been conducted in the processes of both quantifying and identifying MPs. However, the methodologies are extremely time-consuming. This study found that fluorescence and Nile Red are not reliable techniques for qualitative methods to identify MPs because synthetic polymers are easily confused with organic matter and natural polymers. A combination of fluorescent lights (royal blue (450-465 nm) and cyan (~500 nm)) help to distinguish microparticles that are not visible on a white background. Fourier Transform Infrared spectroscopy (FTIR) with attenuated total reflectance (ATR) and transmission mode are used to identify the type of synthetic polymer quantitatively. It is not recommended to use fluorescent light (over 4000 particles analyzed) as quantitative identification of MPs; our results using Nile Redshowed that only 67.1% of white and transparent fibers were correctly identified as natural polymers and 9.1% of fibers were correctly identified as synthetic polymers. Nile Red can dye fragments (approximately 0.75mm to 5mm) that are white or transparent in color but its effectiveness decreases when dyeing fibers darker in color, such as dark blue or black.

Holcomb, Nickolas

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Nickolas Holcomb,
Wesley Bickford

Abstract Name: Pesticide's Impact on Germination Rates of Invasive Phragmites

Phragmites australis (common reed) is an invasive grass prevalent in wetlands across North America, especially the Great Lakes region of the US. Phragmites is a problem in the Great Lakes region due to its rapid growth rate and its ability to outcompete native species in wetlands, harming biodiversity and reducing native ecosystem services. The most common management technique for Phragmites control is application of two systemic herbicides on invasive populations: glyphosate and imazapyr. While these herbicides are effective in killing above and belowground plant tissues, it is unclear whether or not they impact germination rate of seeds the plants disperse after death.We conducted an experiment testing the impact of herbicide application on germination rate of seeds from three different sites. We compared germination rates of seeds grown in optimal conditions to those subjected to herbicide application of both formulations (1) on whole inflorescences (2) soaked on individual seeds, and (3) mixed in growth medium. Our data will demonstrate whether herbicides being sprayed on the plant kill the seeds as well as the plant. According to the labels, neither product is recommended for killing seeds, so we expect that the seeds will not absorb the pesticides before germination, and will only die after a root forms, meaning that while these herbicides remain useful for killing live plants, they will have no effect on the seed bank or seed dispersal. This experiment could be useful for land managers dealing with the invasive Phragmites and improve understanding of how the herbicides used affect the future generation of plants.

Holden, Laura

Institution: *GA - University of Georgia*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Laura Holden

Abstract Name: **Catalytic Variants of O-GlcNAc Transferase and Their Role in X-Linked Intellectual Disability**

The OGT gene encodes for the enzyme O-GlcNAc Transferase that is essential for human life and is responsible for the addition of O-GlcNAc onto target cellular proteins. The O-GlcNAc modification plays a role in numerous processes and diseases including diabetes, cancer, neurodegeneration, and neural development. Previously reported mutations in the N terminal Tetratricopeptide Repeat (TPR) domain of OGT have been found to cause X-Linked Intellectual Disability (XLID). More recently, clinicians have identified 3 mutations in the C terminal catalytic domain of OGT. We hypothesize, based on molecular modeling, that the enzyme will not be able to efficiently bind the sugar nucleotide and transfer O-GlcNAc to proteins. Thus, the variants will alter the O-GlcNAc levels on intracellular proteins. To test this hypothesis, we will express the variants, T570A, Y835C, and A952V, in human cell lines to better understand the effects of the mutations in comparison to our positive control, wildtype, and negative control, catalytically inactive K852M. We have created plasmids via site-directed mutagenesis to express the recombinant OGT enzyme variants. We will use western blots to assess the levels of O-GlcNAc normalized to the amount of recombinant OGT expressed in mammalian cells. This can help us better understand the role that these mutations play in the intellectual disability phenotype. By understanding how the variants alter O-GlcNAc levels and enzyme function, potential therapeutics can be created, and we will better understand the role these mutations play in the phenotype of XLID.

Holder, Anelisa

Institution: *NC - Elon University*

Discipline: Communication/Journalism

Author/Contributors:
Anelisa Holder

Abstract Name: **Starbucks France Branding**

In a country roughly the size of Texas, French consumers drink two times more coffee a year than the international average. Although France has a strong coffee and café culture, international chains, such as Starbucks, have struggled to find a foothold in the country. Starbucks has relatively few locations in France compared to other European countries, and evidence suggests the French have not embraced the global coffee behemoth. This research examines Starbucks' branding in France as well as French customers' perceptions of Starbucks. The topic is important to the field of public relations (PR) because as the world is becoming increasingly connected and globalized, it is critical for PR practitioners to effectively navigate other cultures. It is important that multinational companies (MNCs) consider their communications and marketing to attract customers in countries different from the host nation. Because consumers worldwide often have preexisting perceptions of large brands, MNCs must be aware of their reputation and that of their country of origin before opening in new locations. To understand French consumers' opinions of Starbucks, participant observation was conducted at Starbucks locations in France, in addition to interviews with French Starbucks customers and non-customers. To analyze how Starbucks France communicates with its publics, a content analysis of its website was conducted. Findings from the three methods are discussed through the lens of the circuit of culture, a theoretical framework created by Stuart Hall and other academicians from Open University in Britain who suggest meaning is a cultural practice woven through five "moments." The circuit of culture provides a robust analytic framework to view Starbucks in a cultural context and inform communications strategies for MNCs in general.

Holgado, Julia

Institution: *NC - Winston-Salem State University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Julia Holgado,
Muan Mohamed,
Theofania Tsanos

Abstract Name: **Disparities Affecting the Knowledge of Female Pelvic Floor Disorders**

Pelvic floor dysfunctions (PFDs) are the most common problems faced by women post-partum, however, only a few have access to and awareness of physical therapy (PT). Due to its prevalence, PFD is now considered a public health issue, including urinary incontinence, fecal bowel incontinence, pain during intercourse, and pelvic organ prolapse. White women and women of color had no significant difference in experiencing PFDs, and yet women of color had statistically less knowledge of PFD conditions. African Americans and other women of color are also less likely than white women to recognize childbirth as a risk factor for urinary incontinence and pelvic organ prolapse. Research demonstrates that women with a higher level of education have greater proficiency of PFDs compared to those with a lower level of education. Socioeconomic factors play a major role in the knowledge of PFDs because a higher annual income can provide better access to education and medical care. The aim of this study is to assess women's knowledge of PFDs and raise awareness about the importance of pelvic PT and its benefits for women after childbirth in order to prevent PFDs. Given that there is a lack of research in this area, we aim to bridge the existing gaps regarding the roles that age, racial, and socioeconomic disparities play in the need for education about PFDs, as we believe that this knowledge will help lower PFD cases with the help of pelvic physical therapy. The subjects will be 30 females between the ages of 20 and 40, recruited from college campuses, community centers, and healthcare providers. Data will be collected via a survey consisting of open- and close-ended questions to ascertain women's knowledge and awareness of post-partum PFDs and available therapy options. The survey will be developed in consultation with two licensed pelvic physical therapists.

Holla, Shria

Institution: *KY - University of Kentucky*

Discipline: Economics

Author/Contributors:
Robert Moffitt,
James Ziliak

Abstract Name: **The Safety Net Response to the Covid-19 Pandemic Recession and the Older Population**

The response of the safety net to recessions for the older population has been little examined in the literature. Studies of its responsiveness to the Pandemic Recession have also not been conducted. We examine how benefit receipt from different programs changed for individuals 50-74 for different programs and for individuals with different characteristics. Our examination yields several new findings. First, we establish that the Unemployment Insurance Program and the SNAP (Food Stamp) program are important for the older population as they are for prime age groups. In recessions, in general, and in the Pandemic Recession, these programs provided significant support to older men and women. Second, these programs provided support to those 62 and older as well as to those 50-61, especially SNAP. Low-income individuals after retirement are, even with programs like Social Security and SSI, eligible for SNAP benefits and they often need to apply for and receive benefits during recessions. Although smaller than for younger individuals, individuals 62 and over often receive UI benefits as well. Third, while we find that less educated individuals in the older population are more likely to increase benefit receipt during recessions than more educated individuals, including during the Pandemic, for the UI program receipt among older men and women increased significantly at all education levels. Fourth, we find some evidence, though not conclusive, of countercyclical effects on SSI and/or DI, with receipt rising during the Pandemic and Great Recession. Fifth, we find that men and women, while showing some evidence of differences in program receipt and uptick during the Pandemic, overall show quite similar patterns of increased receipt.

Hollinger, Alan

Institution: *TX - Baylor University*

Discipline: Music

Author/Contributors:
Alan Hollinger

Abstract Name: **A Lover's Journey: Reconsidering Love in Light of Marion**

In The Erotic Phenomena, Jean-Luc Marion derides the metaphysical explanation of humanity introduced by Descartes. Marion writes that our existence “does not come from metaphysics. When you reduce humanity to its essence, it is erotic” (22). That is, instead of ‘I think, therefore I am,’ Marion suggests ‘I love, therefore I am.’ Marion qualifies this love as ‘Love,’ the quality of giving of oneself because one desires to benefit and care for others, not the romantic desire for another person. This recital is a reflection on this radical reversal, exploring the tension between romantic love and Love. The main theme of this recital is how romantic love, as C.S. Lewis phrased it, can assume the grandeur of a metaphysical pursuit, usurping the place of Love. This recital considers the consequences of when romantic love becomes the guiding principle of life, when a person’s hope and emotional well-being rests on a human beloved.The recital presents a story of a lover who falls in love, makes romantic love their guiding principle, reels from the negative consequences of this ethic, and discovers a different ethic–Love–along with the positive consequences that Love brings for a person’s emotional and spiritual well-being. In considering the repetoire for this recital, Equity, Diversity, and Inclusion was a key consideration. Since love and the role of lover is common to all humanity, it is important to ensure that other voices are heardalongside the traditional Art Song corpus of white, male composers.To this end, alongside the traditional corpus of composers--Schumann, Fauré, Schubert, Tosti, and Saint-Saëns--half of the pieces in this recitalare composed by individualsfrom underrepresented groups,particularlyfemale or blackcomposers--Augusta Holmes, Cécile Chaminade, Francesca Caccini, Ethel Smyth, Eleanor Everest Freer, and Sylvia T. Hollifield.

Hollis, Kameelah

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kameelah Hollis

Abstract Name: **Biodegradable Constructed Floating Wetland**

The goal of this project is to build a bio-based floating wetland. The benefit of constructed wetlands come from their ability to be placed where wetlands are not commonly found. Currently, constructed wetlands have been successful in pollution control by chemical sequestration. In addition, recent discoveries have shown that artificial wetlands are also effective as carbon sinks which is essential for lowering the amount of greenhouse gasses that accumulate in the atmosphere. Artificial wetlands are available on the market; however, they contain polyethylene terephthalate, PET, which is a plastic polymer that has the ability to absorb chemicals. These plastics will eventually breakdown, due to wave action, oxidation and other weathering reactions, and possibly lead to increased toxicity in aquatic environments. The wetland we plan to build will be made from Phyllostachys Henon and Phyllostachys Moso, bamboo grown in Louisiana, hemp twine, coco coir pith and sheets, and Phragmites australis. The testing will proceed in two parts. First, the bamboo skeleton will be built, held together by Japanese square and shear lashings, and tested in LSU lakes for three to four months. For the second part, we will grow the Phragmites australis, or adjacent plant, hydroponically in the coco coir, then proceed to test its durability in LSU lakes. We hope that these constructed wetlands will be a cost-effective and sustainable alternative to those on the market, for lower income communities. Also, it is our intention to use this apparatus as a method of mitigating harmful algal blooms.

Holmes, Sarah

Institution: *MO - Truman State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sarah Holmes *Bill Miller*

Abstract Name: Structure-based design of serotonin 2A receptor agonists as a novel treatment for depression

Depression and anxiety are widespread disorders with a complex relationship to serotonin levels, where increasing the availability of serotonin in the synapse is a potential treatment. Current medications on the market tend to take 4-6 weeks to work and have many side effects that can lead to discontinuation, such as nausea, fatigue, dizziness, and suicidal thoughts. Additionally, many people find themselves with treatment resistant depression that doesn't respond to current therapies. This project focuses on serotonin 2a (5HT2A) receptors, to which serotonin binds to transmit messages from one neuron to the next. Current known agonists of this receptor include various non-hallucinogenic molecules, such as the natural substrate, serotonin, and lisuride, as well as hallucinogenic molecules such as lysergic acid diethylamide (LSD) and psilocybin. The goal of the current study is to design novel serotonin 2a receptor agonists without hallucinogenic effects as a potential treatment for mood disorders. Molecular dynamics simulations are currently in progress with 6 non-hallucinogenic and 8 hallucinogenic molecules bound to the 5HT2A receptor within a membrane. These molecules are being investigated to determine the effects of hallucinogenic versus non-hallucinogenic agonists on the conformation of the receptor protein. Although results are preliminary, simulations have shown unique conformational changes in the receptor when bound to the hallucinogenic molecule, psilocybin. Analyses are in progress to quantify the structural changes that occur so that the information can be used to predict whether novel molecules will be likely to cause hallucinogenic effects. Our preliminary results suggest that computational chemistry methods may be useful in the analysis of conformational changes in the 5HT2A receptor caused by ligand binding. The results from this study will ideally shed light on the effect certain agonists have on the serotonin receptor that can be used in the design of future antidepressants.

Homar, Karissa

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Karissa Homar

Abstract Name: Looking at the Past Through Window Glass: Dating the Construction of Buildings at the Montgomery Site, Kenosha County, Wisconsin

Window glass historically follows a pattern of popular production methods over the past three centuries, beginning with crown glass, followed by cylinder, and eventually leading to plate (or float) glass. Each method produced flat (window) glass with a different range of thicknesses. Window glass shards from historic archaeological sites can be used to determine approximate dates of building construction by measuring the thickness of the glass and using developed glass dating formulas. The purpose of this project is to determine possible dates of construction for four separate residential structures excavated at the Montgomery Site using glass thickness and the dating formulae. An additional goal of the study is to determine which of the glass dating formulas and methods used is most accurate and reliable for this site and this region of North America. I utilize the Moir, Ball, Schoen, and Roenke methods of glass dating to analyze the structures of the Montgomery Site. This historic site in Kenosha County in southeastern Wisconsin dates back as far as the 1830s, when records indicate the first structure was built. Individual glass shards are organized and recorded by excavation location as to differentiate glass from different structures. The thickness of each shard is measured in three separate locations and averaged for the highest accuracy possible to provide data to use with the dating formulae. I anticipate taking the results and comparing them to the recorded dates that exist for any structures and using that information to provide an approximate construction date range for each structure for which we do not have historic records.

Honzay, Isabel

Institution: *MN - St. Catherine University*

Discipline: Economics

Author/Contributors:
Lacey Chu *Isabel Honzay* *Abigail Nachreiner*

Abstract Name: **Pedagogical shift and parental mental health during the COVID-19 pandemic: Evidence from the United States**

The global COVID-19 pandemic has negatively affected the mental health of individuals around the country. As a part of social distancing measures, the pedagogical shift from in-person to online learning and class cancellation for primary and secondary schools has increased the stress and anxiety of parents during the pandemic. In this study, we aim to explore the effect of pedagogical shifts, including in-person to distance learning or class cancellation, on the mental health of parents with school-aged children in the United States. Our study utilizes a national dataset from the Household Pulse Survey collected by the Census Bureau from April 23, 2020, through December 21, 2020. After applying the data to the multivariate regression models, we found that pedagogical shifts significantly increased the severity of anxiety and depression symptoms and worsened parents' mental health. Notably, parents with children who had their classes canceled experienced significantly higher levels of anxiety and depression symptoms than those with children who switched to distance learning. These findings were first verified robustly using an alternative model - the ordered logit regression - by considering the anxiety and depression levels as discrete variables with ranking. We then checked our results by using alternative mental health measures for anxiety and depression disorders and estimated the effects of pedagogical shifts using the linear probability model. We further conducted a heterogeneous analysis by exploringpedagogical shiftingeffects by gender, race, working status, and political affiliation by the 2020 presidential elections. Our results reveal complex variations by different groups of parents affected by the pedagogical shift due to the Pandemic. These findings highlight an urgency for state, federal, and societal policy changes to address the growing mental health issues and disparities among parents with children during these challenging times in the United States.

Hoque, Suriya

Institution: *NY - Brooklyn College*

Discipline: Public Health

Author/Contributors:
Suriya Hoque

Abstract Name: **Motivating Factors Behind Following COVID-19 Guidelines Among College Students**

The ongoing COVID-19 pandemic has created vast changes in human behavior. The virus, SARS-CoV-2, was first identified in Wuhan, China in November 2019. While there were early efforts to contain the virus, by March 2020 it became a global pandemic. As of October 2022, there have been over 6.5 million reported deaths. Unlike previous coronaviruses, people can easily contract and spread SARS-CoV-2, due to its high transmissibility and comparatively mild symptoms. However, symptoms can be severe and deadly, especially among immunocompromised and elderly populations.For this reason, organizations such as the World Health Organization (WHO) created comprehensive guidelines to prevent its transmission and spread. These rules include wearing masks in public, staying at home, social distancing, disinfecting hands and surfaces, and later getting vaccinated. These rules were often enforced through mandates and lockdowns, with which most people complied. Yet, there are some people that broke or disregarded these rules.This project seeks to understand the motivating factors behind following COVID-19 guidelines. In addition, I am looking to understand why people continue to follow certain guidelines such as masking and social distancing despite the lifting of these mandates and regulations. These factors include fear, compliance with rules, and safety of self and others. Through my research, I am hoping to find the most relevant motivating factor. Finally, I am also looking to understand what motivates people to not follow or disregard these guidelines.For this research, my subject is Brooklyn College students who were subjected to the CUNY guidelines starting Fall 2021. I aim to analyze previous research done on following COVID-19 guidelines in addition to collecting my own research which will involve surveying students on their motivations behind following these guidelines and analyzing the data using statistical methods. This research will help understand human behavior in following or breaking rules.

Horabik, Kristine

Institution: *WI - Madison Area Technical College*

Discipline: FAN Abstract

Author/Contributors:
Elizabeth Behr,
Kitrina Carlson,
Kristine Horabik,
Elise Van Ginkel

Abstract Name: **Community College "CUREs" Engagement Deficits in Biology**

Madison Area Technical College (Madison College) is a public technical and community college serving Madison, WI, and the twelve surrounding counties. Total enrollments exceeded 24,000 students in the 2021-22 academic year, with 42.2% of entering full-time students in Fall of 2020 continuing the following Fall. The Liberal Arts transfer program offers seven tailored pre-majors designed for transfer and satisfaction of the first two years of general studies at some institutions, with the University of Wisconsin-Madison serving as our largest transfer partner. A federally funded initiative to improve transferstudent success through the establishment of Course-Embedded Undergraduate Research Experiences (CUREs) was established in majors' biology courses beginning in Fall 2018. This project has resulted in over 500 students participating in skills-focused CUREs in biology courses, and is expandingbeyond the target courses to include related courses and programs. Prior to our CUREs implementation, only 18% of students completed abiology majors course series within two semesters. After CUREsimplementation, 32% of students complete abiology majors course series within two semesters.Our panel will discuss this, and otheroutcomes of implementing CUREs in our biology courses, as well as the challenges and opportunities associated with implementing CUREs at a community college. Details about two of our collaborative CUREs initiatives, including ourwork implementing Tiny Earth and Sea Phages across three different biology courses will be highlighted.

Horgan, Ella

Institution: *MT - Montana State University - Bozeman*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ella Horgan

Abstract Name: **Cumulative Risk Assessment of Exposure to Well Water Contaminants at the Lower Clark Fork Watershed in Montana**

Many Montana residents rely on wells as their source of drinking water. Numerous impurities can insert themselves into the drinking water, many of which are health concerns. The issue is wells are primarily unregulated, and there has yet to be any data showing the cumulative risks of these contaminants in Sanders county, where the Lower Clark Fork watershed is located. This research shows the top five main concerns in the Lower Clark Fork watershed and aims to help citizens educate themselves on what they consume. The groundwater contaminants that are of primary concern include arsenic, manganese, and nitrate. Iron and hardness are also prevalent but only cause cosmetic issues. Nitrate and arsenic are highly harmful to drink and can cause cardiovascular, nervous, and respiratory problems. When living in a rural community such as Sanders county, it is easy to overlook these health concerns as they are not widely discussed. The lack of knowledge about these issues is dangerous. People should have access to safe drinking water at their homes and information regarding what is in their water. With the data from this study, people can take action with proper filters and other devices that can be life-saving.

Horn, Aly

Institution: *NC - University of North Carolina at Pembroke*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Aly Horn

Abstract Name: **Floriography to Human Relations Portrayed in Etchings**

Understanding the underlying meanings or uses of flowers and other plants has been a long-standing practice since the beginning. Flowers had many social usages in Victorian times; whatever was sent to someone would change the underlying meaning of the gift. Then in many tribal or indigenous cultures, there is a greater purpose to use herbs and other plants for medicinal purposes. Along with that, many human traits are related to flowers and anthropomorphizing them to have a stronger sense of the various meanings of flowers. Working with copper to create prints was also done long ago; this is more commonly known as engravings. The engravings would be cut and carved into the plate to create the grooves in the piece that would print, though, in the more modern world, there is a more straightforward way, etching. Since there is such a short time for this project, etching would be the most convenient way to make all the pieces and still evoke the linework in engravings. This project aims to gain more floriography knowledge and combine that information with a small series of four 4” by 6” copper etchings. When working with the copper etchings, various techniques are displayed, aquatint and mezzotint. These two techniques help to give more depth and texture to work. Aquatint adds a fine mist and smoky tone to an art piece, and mezzotint creates a strong contrast in the composition.

Horne, Kayla

Institution: *KY - University of Kentucky*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Elizabeth Rice,
Luke Bradley,
Kayla Horne,
Emily Guerrero,
Jada Covington,
Lordina Mensah,
Alexis Smith,
Andrea Hernandez

Abstract Name: **The Symphony of the Cell: Using Data Sonification to Engage Students in Molecular and Cellular Biology**

As technology advances in all aspects of our lives, the demand for careers in science, technology, engineering, and mathematics (STEM) hasincreased exponentially. However, many students find STEM challenging, and further, lack key experiencesto gain a sense of belongingin STEM and consider pursuing it as a career. Thus, providing STEM learning modules that introduce key concepts while engaging students can make an impact in addressing this need. A particularly difficult topic for students to understand is the relationship between cells and how the sequence and structure of proteins ultimately contributes to their function. In order to introduce these basic principles to introductory students, our team has constructed a virtual authentic-learning tool that utilizes data sonification in which each amino acid in a protein sequence is assigned a musical note and rhythmic value based on its hydrophobicity. This allows a harmonious musical piece to be composed based on the sequence of a functional protein. Disease-associated mutations become disharmonious which allows users to auditorily identify disruptions in a protein sequence and understand how it impacts the cellular symphony. We will present our preliminary survey data supporting our hypothesis that this data sonification learning module helps students gain an understanding of the molecular basis of disease while improving students attitudes towards STEM.

Hornung, Alex

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alex Hornung,
Garrett Sprouse,
Jayden Trocke

Abstract Name: Simulation of the Shear Flow Dynamics of Suspended Microscale Particles

Understanding the shear flow dynamics and wall interactions of non-spherical particles suspended in fluid media is important in a number of fields, from large scale phenomena like coastal erosion to mesoscopic and microscale applications such as additive manufacturing with fiber-reinforced composite filaments and shape-based separation of particles and biologicals.In particular,focusing on the geometric orientations of high-aspect ratio fiber-like particles suspended in low- and high-viscosity fluids transported through precision engineered pores with radially asymmetric geometries. This includes usinga combination of analytical methods and numerical simulations with computational fluid dynamics solvers ANSYS Fluent and STAR CCM+ to evaluate the ability of customized microscale pores with tapered sidewalls to orient and align fibers suspended in fluid media. We believe these results to also provide valuable insights into nanoscale applications such as the wafer-scale printing of aligned carbon nanotubes for microelectronic circuits.

Horstman, Oksana

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Public Health

Author/Contributors:
Oksana Laura Horstman *Ethan Ahlbrecht* *Trinity Wilson*
Danielle Zahn

Abstract Name: Investigation of Ventilation and Air Quality in Classrooms

The transmission of the coronavirus can be greatly impacted by indoor ventilation and air purifiers according to the U.S. Environmental Protection Agency and other public and private institutions and researchers. The concentration of aerosols in the air that contain the virus can be reduced by proper ventilation systems, which circulate and filter the air for increased quality. Aerosols with a diameter of2.5µm or lessare a possible carrier of SARS-CoV-2. PM 2.5 pollution may also increase the cellular expression of ACE2, associated with greater viral susceptibility. Ventilation to reduce PM 2.5 levels addresses both risks. Tests using incense as an indicator before, during, and after burning were used to see how quickly the ventilation in the rooms was able to remove excess PM 2.5. A calibrated DustTrak II monitor was used to record particulate matter, then Honeywell HEPA air purifiers were emplaced to see if further purification would aid in ventilation compared to only an HVAC system. Room air exchange rates (ACH, hr-1) were calculated using a spreadsheet by Jimenez at UC-Boulder. ACH rates in a small (15 person) meeting room were 5.88 hr-1 with HVAC alone and 16 hr-1 with two added air purifiers. Corresponding rates in an average (35 person) classroom were 9.62 hr-1 and 12.0 hr-1 with a single purifier. In this case, HVAC and air purifier coverage was 1.25–2.72 times as efficient as just HVAC coverage. Results for local weightlifting rooms are currently being investigated and will be included. A limitation of this research was the occasional pooling of incense smoke near the opening of the air monitor leading to a temporary spike in PM 2.5 levels. Use offans can address this issue. HEPA air purifiers reduce PM 2.5 levels and in turn may help lessen transmission risk of SARS-CoV-2 aerosols and airborne viruses

Horton, Alyssa

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Alyssa Horton *Thomas Atwood* *Natalie Hanson*
Katelyn Moyer *Nicholas Beltz* *Saori Braun*
Jeffrey Janot

Abstract Name: **The Cardiorespiratory Response while Nordic Walking vs. Regular Walking Among Middle-Aged to Older Adults**

Background/Purpose: Around 60-80% of waking hours for adults are spent in sedentary behavior while physical inactivity accounts for 9% of all deaths worldwide. Furthermore, there is a strong dose-response relationship between physical inactivity and all-cause mortality, cardiovascular health, and metabolic health. Recently, Nordic walking (NW) has been introduced as a superior mode of exercise where one can increase energy expenditure due to increased engagement of upper body musculature while walking at a moderate intensity pace. NW is like regular walking except for using walking poles. Within established findings, most work has been done in a laboratory which can interrupt natural NW mechanics. Therefore, the purpose of this study was to measure the cardiorespiratory and energy expenditure differences in Nordic walking and regular walking in a field setting. Methods: Twenty middle-aged and older adults participated in this study. Each participant's initial session included Nordic walking familiarization, 10-m gait speed test, and a peak oxygen uptake (VO2peak) test. The two exercise sessions consisted of either NW or regular walking on an indoor track for 30 minutes. All metabolic variables were measured via the COSMED K5. Results: A paired-sample t-test revealed a significant difference between NW and regular walking for %VO2peak values (p = .008), kcal·min-1 (p = .005), and total kcal expenditure (p = .001). No significant difference was found for preferred gait speed (p =.485) between NW and regular walking. Conclusion: NW is superior to regular walking in eliciting a higher %VO2peak despite similar walking speeds, a higher kcal·min-1, and greater total kcal expenditure. In turn, these data agree with previous research and supports the use of NW to increase energy expenditure to potentially prevent the risk of one's metabolic and cardiovascular risk.

Hoss, Kristen

Institution: *IA - Iowa State University*

Discipline: Sociology

Author/Contributors:
Kristen Hoss

Abstract Name: **Keeping Shelters in Place: Understanding the Impacts of Residential Landlord Decision-Making on Post-Disaster Housing Stability**

The COVID-19 pandemic illustrated the vulnerability of tenants and the challenge of maintaining rental housing stability in the face of disaster and other shocks to the local housing market. As one piece of a larger, 3-year study investigating rental property owner decision-making across the stages of the disaster management cycle, this research focuses specifically on the narratives of challenge and post-disaster resilience from within the rental housing industry. It asks two research questions: (1) How did the rental housing industry respond to the challenges created by the COVID-19 pandemic? and (2) How has the industry changed as a result of these experiences?" Using interviews with industry representatives from 5 states as well as archival research from industry publications as well as local media, this study identifies key themes in how the rental housing industry frames the problem of rental housing stability and the solutions it puts forward for addressing the challenge.It is our hope that the findings of this study will assist local government officials and other stakeholders in the city and region in developing pragmatic response strategies to allow cities to recover fast and be resilient to future disaster scenarios.

Hou, Catherine

Institution: *DC - American University*

Discipline: **Philosophy/Religious Studies**

Author/Contributors:
Catherine Hou

Abstract Name: **A Feminist Defense of Obsession as a Moral Emotion**

One aim of feminist ethics and moral psychology is to morally redeem various emotions traditionally understood to be “detrimental” or otherwise “negative.” Following these pursuits, I attend here to the moral value of “obsession,” which has not yet been given adequate consideration as a morally significant emotion. I focus here on a particular kind of obsession, distinguished from existing understandings of obsession in both psychological and philosophical literature, that is non-clinical and ego-syntonic in nature. To show the moral value of non-clinical, ego-syntonic obsession, I extend four common defenses—found in feminist moral psychology—of other “negative” emotions, such as anger, bitterness, and contempt. In extending these defenses, we see that non-clinical, ego-syntonic obsession can be morally valuable for the same reasons feminists have defended other emotions. I conclude that by not acknowledging the moral value of obsession, feminists deprive themselves of an important line of argument for our existence as valuers.

Houssou, Dela

Institution: *IA - Iowa State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alice Alipour,
Dela Houssou

Abstract Name: **Resiliency of power network under wind event.**

The power grid in the United States faces threats from hurricanes and natural hazards events. Every year, power outages cause millions of dollars to the national economy. Increasingly natural hazards events pose the threat of widespread disruption as demonstrated in 2020, when Iowa was hit by a derecho, causing substantial damages not only to properties but also caused widespread power outages across the state. The Iowa Department of Homeland Security and Emergency Management reported that there were more 480,000 power outages and wind speed as high as 140 mph. The goal of this project therefore is to quantify the resiliency of electric power network during extreme wind events under an evolving climate change. Using a 13-year climate data, our research will model the effect of wind above 20 meters per second andmodel the effect of these winds on the physical infrastructure of the power network.

Howard, Alexandrea

Institution: ***OH - Ohio University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Alexandrea Howard,
Gabriella Howard,
Samuel Howard

Abstract Name: **THE EFFECTS OF SCARCITY ON VACCINE UPTAKE: AN EXPERIMENT**

Increased rates of vaccine hesitancy are one of the top ten threats to global health (World Health Organization, 2019). Those who are vaccine hesitant may be more susceptible to communication strategies to encourage vaccination (e.g., Shoots-Reinhard et al., 2022). Vaccine hesitancy may be reduced via changing beliefs about vaccines (e.g., Brewer et al., 2019). Brock's scarcity principle (1968) suggests that the scarcity of an object increases consumers' preference for it, a possibility that has been supported in over 40 studies showing that an item's perceived value can be increased by promoting its scarcity (Lynn, 1991). We suggest that scarcity messaging may help overcome vaccine hesitancy. Pereira et al. (2021) found that when vaccines were scarce, vaccine intentions decreased. However, they tested the COVID vaccine, which is politically contentious, and they were unclear whether at-risk people had already been vaccinated. Moreover, they only tested supply-based scarcity (i.e., vaccine is limited due to low resources) when demand-based scarcity (i.e., popularity of vaccine) has been shown as more effective in consumer behavior research due to the bandwagon effect (van Herpen et al., 2009; Verhallen; Robben, 1994; Worchel et al., 1975). We will use a national sample to test our following two hypotheses using a 2 (scarcity level) x 2 (scarcity type: supply or demand-based) experiment: 1) higher scarcity will increase vaccine intentions, but particularly when scarcity is demand-based versus supply-based and 2) Demand-based (vs. supply-based) messages will mediate the effect of condition on vaccine intentions. We expect to find that scarcity does influence vaccine hesitancy, but that supply-based scarcity is less effective than demand-based scarcity. We further expect to show that risk perceptions, social norms, and attitudes will mediate the effect of scarcity on intentions.

Howard, Gabriella

Institution: ***IL - Northwestern University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Alexandrea Howard,
Gabriella Howard,
Samuel Howard

Abstract Name: **THE EFFECTS OF SCARCITY ON VACCINE UPTAKE: AN EXPERIMENT**

Increased rates of vaccine hesitancy are one of the top ten threats to global health (World Health Organization, 2019). Those who are vaccine hesitant may be more susceptible to communication strategies to encourage vaccination (e.g., Shoots-Reinhard et al., 2022). Vaccine hesitancy may be reduced via changing beliefs about vaccines (e.g., Brewer et al., 2019). Brock's scarcity principle (1968) suggests that the scarcity of an object increases consumers' preference for it, a possibility that has been supported in over 40 studies showing that an item's perceived value can be increased by promoting its scarcity (Lynn, 1991). We suggest that scarcity messaging may help overcome vaccine hesitancy. Pereira et al. (2021) found that when vaccines were scarce, vaccine intentions decreased. However, they tested the COVID vaccine, which is politically contentious, and they were unclear whether at-risk people had already been vaccinated. Moreover, they only tested supply-based scarcity (i.e., vaccine is limited due to low resources) when demand-based scarcity (i.e., popularity of vaccine) has been shown as more effective in consumer behavior research due to the bandwagon effect (van Herpen et al., 2009; Verhallen; Robben, 1994; Worchel et al., 1975). We will use a national sample to test our following two hypotheses using a 2 (scarcity level) x 2 (scarcity type: supply or demand-based) experiment: 1) higher scarcity will increase vaccine intentions, but particularly when scarcity is demand-based versus supply-based and 2) Demand-based (vs. supply-based) messages will mediate the effect of condition on vaccine intentions. We expect to find that scarcity does influence vaccine hesitancy, but that supply-based scarcity is less effective than demand-based scarcity. We further expect to show that risk perceptions, social norms, and attitudes will mediate the effect of scarcity on intentions.

Howard, Rachel

Institution: ***FL - Jacksonville University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Stoeber,
Roberto Simona Jr.,
Haleigh Cassidy,
Rachel Howard

Abstract Name: Examining the abundance, distribution, and behavior of Gray Seals (Halichoerus grypus) in the presence of white sharks (Carcharodon carcharias) off of Scatarie Island, Nova Scotia

Great white shark (Carcharodon carcharias) migratory patterns within the Atlantic Canada waters have been tracked and studied by the OCEARCH research team since 2018. As part of their migration, adult sharks typically spend most of the summer in the coastal waters of the Northern United States and Atlantic Canada. During this span, the gray seal (Halichoerus grypus) serves as an energy-rich food source for these apex predators. Gray seals form dense colonies on rocky outcrops near shore, but must travel to deeper water to forage. While traveling to deeper water, foraging, and returning to the colony, these seals are vulnerable to predation.Gray seals often congregate on “launch pads”, or shallow areas offshore of the colony, which they use as staging and return areas for their foraging expeditions. To examine the abundance of gray seals at a well-established colony in Nova Scotia, as well as the influence of nearby predators on seal behavior, small unmanned aerial vehicles (UAVs) were deployed off of Scatarie Islands. These UAVs were used to assess the abundance of seals, identify shallow water launch pads, and observe seal behavior. Data collection via drone surveillance provided high-resolution imagery of animal locations and behavior within the research area without disturbing the seal colony. The information gained through this study was then provided to OCEARCH to enhance their understanding of this popular white-shark feeding ground and assist with future fishing efforts.

Howard, Samuel

Institution: ***OH - Ohio University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Alexandrea Howard *Gabriella Howard* *Samuel Howard*

Abstract Name: THE EFFECTS OF SCARCITY ON VACCINE UPTAKE: AN EXPERIMENT

Increased rates of vaccine hesitancy are one of the top ten threats to global health (World Health Organization, 2019). Those who are vaccine hesitant may be more susceptible to communication strategies to encourage vaccination (e.g., Shoots-Reinhard et al., 2022). Vaccine hesitancy may be reduced via changing beliefs about vaccines (e.g., Brewer et al., 2019). Brock’s scarcity principle (1968) suggests that the scarcity of an object increases consumers’ preference for it, a possibility that has been supported in over 40 studies showing that an item’s perceived value can be increased by promoting its scarcity (Lynn, 1991). We suggest that scarcity messaging may help overcome vaccine hesitancy. Pereira et al. (2021) found that when vaccines were scarce, vaccine intentions decreased. However, they tested the COVID vaccine, which is politically contentious, and they were unclear whether at-risk people had already been vaccinated. Moreover, they only tested supply-based scarcity (i.e., vaccine is limited due to low resources) when demand-based scarcity (i.e., popularity of vaccine) has been shown as more effective in consumer behavior research due to the bandwagon effect (van Herpen et al., 2009; Verhallen; Robben, 1994; Worchel et al., 1975). We will use a national sample to test our following two hypotheses using a 2 (scarcity level) x 2 (scarcity type: supply or demand-based) experiment: 1) higher scarcity will increase vaccine intentions, but particularly when scarcity is demand-based versus supply-based and 2) Demand-based (vs. supply-based) messages will mediate the effect of condition on vaccine intentions. We expect to find that scarcity does influence vaccine hesitancy, but that supply-based scarcity is less effective than demand-based scarcity. We further expect to show that risk perceptions, social norms, and attitudes will mediate the effect of scarcity on intentions.

Howard, Taylor

Institution: *MO - Truman State University*

Discipline: Education

Author/Contributors:
Taylor Howard

Abstract Name: **Increasing the Accessibility of K-12 Music Education for Minority Students**

Music is a great tool for minority students to express themselves and their cultures. However, traditional music education practices centered only on Western classical music may diminish BIPOC peoples' sense of importance in broader society when they do not see themselves reflected in the curriculum. Limited school budgets and program offerings particularly affect low-income children, a disproportionate number of whom are BIPOC individuals, and further complicate the music education these students receive in public schools. In order to better understand the curricular offerings and opportunities available to students of color, I surveyed K-12 public school music teachers (N = 16) to determine any recurring financial and administrative issues or problems within the community that could adversely impact students' participation in music. The respondents noted less administrative and familial support of music education in schools with high minority populations. Further, teachers had varied opinions about prioritizing non-Western art music in their own classrooms. The findings suggest that implicit bias may be present in public schools and that those in positions of power in schools can negatively affect the learning potential of minority students. Through ethno-pedagogical practices, music education may be able to positively contribute to higher musical achievement by minority students and to further diversify the music field.

Howat, Annabelle

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Morgan Dekan *Annabelle Howat* *Abby McCullough*

Abstract Name: **Examining Low-Income Household Shopping with Supplemental Nutrition Assistance Program Benefits at the Eau Claire Downtown Farmers? Market Using the Market Match Incentive Program From 2018-2022**

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. In 2020, COVID-19 increased the number of families facing food insecurity while the ECFM also faced challenges regarding how to operate safely. This poster uses administrative data to analyze shopping by SNAP households at the ECDFM using the MMP between 2018-2022. The number of SNAP households shopping at the ECDFM increased in 2020 and 2021 while the associated spending also increased in both years as the SNAP caseload was rising due to the pandemic. As the SNAP caseload declined to about the same level as in 2020, the number of SNAP households shopping at the ECDFM using the MMP and the corresponding spending declined in 2022. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at the ECDFM using the MMP over this period. This poster is connected to a another submitted poster analyzing a variety of data from surveys of SNAP households shopping at the ECDFM using the MMP during these years.

Howell, Daniel

Institution: *IA - Iowa State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Daniel Howell,
Xun Wu

Abstract Name: **Polyethylene Upcycling via Hydrogenolysis with an MCM-48 Silica Core-Shell Catalyst**

It is difficult to overstate the importance of synthetic polymers to our industrial society. Plastic is nearly ubiquitous in its presence throughout human activities, and the demand for plastics is projected to rise in the coming decades. However, the stable chemical properties of plastics that give them such high utility are the same properties that make them notorious environmental pollutants. Thus, there is much interest in developing new strategies to eliminate or reuse plastic waste. One such strategy is to develop systems of chemical "upcycling," which is the conversion of plastic waste into other potentially useful chemicals. Upcycling is advantageous because it circumvents the downgrading effects that conventional recycling has on plastic products. Previous research has developed a catalytic system in which a platinum-loaded silica core-plus-shell catalyst converts polyethylene into smaller alkanes. This research demonstrates the changes in catalytic activity in polyethylene hydrogenolysis when the catalyst's core possesses MCM-48 silica morphology instead of the original solid silica morphology. Notable changes include greater selectivity to products with 9 to 57 carbon atoms. Catalytic activity was determined by proper mass balance, and reaction product distributions were analyzed with gas chromatography. The structure of the catalysts was characterized with transmission electron microscopy.

Hoxie, Casandra

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Dylan Jackson,
Giaolong Nguyen,
Cassandra Hoxie,
Evan Delveaux,
Hallie Hughes,
Darius Fieschko

Abstract Name: **Modine Capacitive Liquid Level Sensor**

The purpose of this project is to create a capacitive liquid level sensor that will be equipped in automotives created by the Modine Manufacturing company. The Modine Manufacturing company would like to replace their current liquid level sensor with a new one that is more cost effective and has additional features. The current sensor costs Modine over eighty dollars per piece. The current sensor's only waterproofing is a sticker that must be removed to calibrate, and the sensor has no CAN communication. Modine would like our team to design a drop-in replacement for this sensor that has better waterproofing, CAN J1939 communication, and can be produced in house. The team is utilizing a pre-existing integrated circuit to save space, money, and time in the final design. Since the team will be implementing software calibration, we will be able to forgo openings for physical calibration and end with a far more water-resistant device. Much of our electronic design is complete and being followed closely by development in other areas of our project. The design of our power electronics is complete. Programming of the current IC, design of the sensor's internal PCB, and integration of CAN communication are all well under way. There are prototype devices being worked on and the group will soon be sending out Gerber files for final construction of our printed circuits. This device will be able to accurately measure and relay quantities of coolant inside automotive coolant tanks while remaining robust enough to resist liquid damage. It will be inexpensive to produce and feature up to date vehicle communication protocols.

Hoyle, Latetia

Institution: *NC - Appalachian State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Latetia Hoyle,
Alyson Gonzalez,
Carol Babyak

Abstract Name: **Metal Speciation**

Metals in the natural environment exist in multiple forms or species including soluble organic and inorganic complexes, colloids, and free metal ions. According to the biotic ligand model, free metal ions are more bioavailable than other forms and are therefore considered to be more toxic. We studied the speciation of lead, copper, and mercury in the South Fork New River upstream and downstream of a wastewater treatment plant (WWTP) in northwestern North Carolina. Since WWTPs discharge dissolved organic matter (DOM), we expected metals downstream of the WWTP to be bound by DOM, making them less bioavailable but more likely to be transported throughout the environment. Anodic stripping voltammetry (ASV) with a boron-doped diamond electrode was used to quantify free metal concentrations. Surprisingly, in 2021, we found higher concentrations of free metal ions downstream of the WWTP, even though we expected the WWTP to discharge DOM capable of binding metals. More recent work in 2022, however, suggests similar free metal ion concentrations upstream and downstream of the WWTP. The complexing capacity of the South Fork, or its ability to bind free metal ions, is 5 parts-per-billion both upstream and downstream of the WWTP. We plan to study the seasonal variation in metal speciation and if pH or electrical conductivity impacts free metal ion concentrations and complexing capacity. We will also measure total metal concentrations using acid digestion and inductively coupled plasma-optical emission spectroscopy (ICP-OES).

Hozyen, Lojy

Institution: *VA - Virginia Commonwealth University*

Discipline: **Public Health**

Author/Contributors:
Lojy Hozyen

Abstract Name: **Glyphosate and Dopaminergic Neurotoxicity: Herbicide Impacts on Parkinson?s Disease Development**

Nearly one million individuals in the United States are living with Parkinson's disease (PD). In the past two decades, the death rate from PD rose by about 63 percent in the United States. Major findings have been made in the past five years about the risk of glyphosate (N-(phosphonomethyl) glycine) exposure on the onset of PD symptoms. The purpose of this meta-analysis is to provide a compiled update on the chemical and biological alterations that glyphosate imposes on the human brain. To compile results regarding the association between glyphosate exposure to humans and PD onset, a meta-analysis was conducted to create a quantitative estimate of the connection between PD and glyphosate. Findings suggest that glyphosate exposure causes synaptic terminal alterations which affect the synaptic assembly and neuronal connectivity and glyphosate alters adaptation of gene expression by crossing the blood-brain barrier. Although it is widely accepted that significant alterations in vesicular handling of dopamine occur with exposure to Dichlorodiphenyltrichloroethane (DDT), it was recently found that glyphosate has similar mechanisms, showing a decrease in dendritic complexity and synaptic spine maturation in hippocampal neurons which are closely connected with basal ganglia nerve cells, the cite of dopamine production. Despite DDT being banned 1972, glyphosate still remains readily available for consumer use. The results of this study may be relevant for FDA officials to create safer regulations for this agrochemical.

Hraban, Cassidy

Institution: *CO - Regis University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassidy Hraban *Jamey Maniscalco*

Abstract Name: **Understanding the Neurophysiological Mechanisms of Anorexia Nervosa**

Anorexia nervosa is a disorder that stems from anxious thoughts and behaviors. Anorexia nervosa has the highest mortality rate of all psychiatric illnesses due to its chronicity and high relapse rate. This highlights a need for a better understanding of the disorder to be able to provide better treatment options. Neurologically, it has been found that periods of starvation lead to reduced anxiety-like behavior in rats. This finding raises the question of what neurobiological mechanisms are behind this reduced anxiety response. Hindbrain neurons, such as the GLP-1 neuron, have been found to have reduced activation during periods of caloric deficit. In addition, the hypothalamus-pituitary-adrenocortical stress response axis shows reduced activation in the hypothalamus during periods of fasting. This reduced activation in the hypothalamus inhibits the stress response and can provide short term stress relief when food intake is decreased. This feeling of a reduction in stress may cause an anxious individual to begin disordered eating in the first place, but as these behaviors continue, maintaining this extremely decreased caloric intake now becomes the source of stress rather than relief. A secondary hypothesis may be that the hypothalamus is involved in glucose regulation through the release of glucocorticoids, and so the hypothalamus may be hyperactivated causing an increase in release of glucocorticoids to compensate for a lack of glucose from food. It is important to understand the level of activation of the hypothalamus and hindbrain GLP-1 neurons to better understand the neurophysiological mechanisms in anorexia nervosa and to gain knowledge in hopes to produce a more effective treatment for anorexia nervosa. Our study aims to investigate how the brain processes stress during periods of caloric deficit by modeling anorexia nervosa using an activity-based anorexia model in rats and highlighting through immunohistochemistry which neurons in the hypothalamus and hindbrain are activated.

Huang, Jason

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Chemistry/Materials Science

Author/Contributors:
Jason Huang *TaoTao Ling* *Jacqueline Stephens* *Fatima Rivas*

Abstract Name: **Synthetic Approaches to Prenylated Coumaric Derived Natural Products Against Type 2 Diabetes**

The natural product Plicatin B is found in the plant Artemisia Scoparia. This chemical compound features a unique structural combination of a p-coumaric acid and prenylated substituents. Plicatin B and it's family members have been reported to ameliorate the effects of type 2 Diabetes Mellitus (T2DM) through in vitro studies. T2DM occurs when the cells in the human body resist the normal effects of insulin, with the purpose of insulin being directing glucose from the blood into somatic cells. Incidences of T2DM have been steadily and significantly increasing in the United States, and for that reason, new therapeutic strategies are needed.
Herein, we present a synthetic strategy using a series of chemical reactions including the Wittig Reaction and Claisen Rearrangement, to develop an efficient synthetic approach to access Plicatin B. The chemical reactions will be conducted under anhydrous conditions in suitable organic solvents, and the products will be monitored by thin-layer chromatography (TLC). The reaction mixtures will then be worked-up with aqueous solutions, and after organic layer separation the solvent will be concentrated via evaporation. Finally, the residue will be purified via normal phase silica gel column chromatography and characterized via NMR spectroscopy.
The desired natural product will be compared to authentic samples available. Plicatin B and its derivatives will be tested via a broad range of in vitro, in vivo, and in silico assays to investigate their mode of action. It is anticipated that an efficient synthesis of Plicatin B and its derivatives will provide the answer to new, potentially therapeutic strategies to alleviate the detrimental effects of T2DM, as well as contribute to lowering the costs of current treatments.

Huang, Jian Ming

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jian Ming Huang,
Mekhala Kumar,
Gideon Rothschild

Abstract Name: **Role of rats auditory cortex in processing relevant self-generated sounds during locomotion**

Imagine waking up at night and attempting to get a glass of water in the kitchen. You might need to pay extra attention to your footsteps to determine whether you are walking on the wooden floor of the kitchen or not. The ability to process self-generated sound (e.g., footstep) during locomotion has been debated to provide spatial cues for navigation. From previous research, the sensory-evoked responses of the auditory cortex–a region of the brain that processes acoustic information–are found to be suppressed during locomotion. Yet, this suppression of auditory cortical responses could be explained by the lack of relevance or meaning of the sound to the animals' behaviors. On the other hand, the underlying role of the auditory cortex in processing relevant, self-generated sounds during locomotion remains mostly unclear. With a focus on rats as an animal model, we apply chemogenetic techniques to selectively inactivate rats' auditory cortex and compare their performance with normal rats in a spatial navigation task. We anticipate that the rats with inactivated auditory cortex will perform worse on the navigation task than the normal rats. This reduction in task performance will be consistent with our hypothesis that rats are utilizing their auditory cortex to process relevant, self-generated sounds during locomotion. However, if no such performance difference is observed, we hypothesize that the rats form an internal mapping system during locomoting. Instead of utilizing the relevant self-generated sound as external navigation cues, rats are monitoring their spatial location through internal cues such as vestibular, proprioceptive, and motor efference information, or other sensory cues.

Huang, Julia

Institution: *MI - Schoolcraft College*

Discipline: Computer Science/Information Systems

Author/Contributors:
Julia Huang

Abstract Name: **"What's That Sound?": A Versatile, Robust, and Lightweight Convolutional Transformer for Environment Sound Recognition**

The conventional hearing aid is both costly and limited in usage, as it is not intended to detect non-speech audio. Our objective is to develop a machine-learning solution to provide a more accurate and affordable mechanism to identify surrounding sounds to improve the safety of the hearing impaired, i.e., if a car is honking behind pedestrians, or a gunshot is fired, and they need to move away from the source. By adding randomized augmentations to audio, concatenating a Mel-Frequency Cepstral Coefficients (MFCCs) diagram and a log-mel Spectrogram, and embedding Convolutional Neural Networks (CNNs) into a Transformer architecture, the Randomized Audiomentational Layered Convolutional Transformers (RALCT) model efficiently extracts features from diversified audio representations. In addition, RALCT is small enough, with only approximately 310,000 parameters, to be deployed into mobile devices. Experimental results on the UrbanSound8K dataset resulted in an accuracy consistently over 93% for all variations of RALCT, with the highest at 94.56%, reaching state-of-the-art levels in the audio processing machine learning research field. To leverage the capabilities of this technology, a mobile app is developed to be integrated with the model to provide real-time safety control. RALCT thus represents a robust, lightweight, affordable, and versatile deep learning tool to aid the navigation and safety of the hearing impaired.

Huang, Julia

Institution: *MI - Schoolcraft College*

Discipline: Computer Science/Information Systems

Author/Contributors:
Julia Huang

Abstract Name: **A Universal, Efficient Deep Learning Approach to Various Cancer Detections from miRNA Expressions**

According to the National Cancer Institute, approximately 39.5% of individuals globally will be diagnosed with cancer at some point during their lifetimes. Among all cancer types, it is found that breast, kidney, liver, lung, and thyroid are among the most common, with over tens and even hundreds of thousands of new cases annually. As cancer is both a common and life-threatening disease around the world, there poses a question of how best to predict, detect, and diagnose cancers. Recently, microRNAs, or tiny noncoding miRNAs, have been discovered to be critical biomarkers for detecting various forms of cancers, as they result in different expressions in normal and cancerous tissues. Because a certain set of these miRNAs have been linked to specific cancer types, we develop, train, and optimize two different robust deep learning algorithms, Random Forest and XGBoost, to perform miRNA feature selection by first including only significant miRNAs then classifying between tumor and control on miRNA
datasets for quick and convenient identification of cancers. We performed studies on six different cancer types and experimented with both complex and simple versions of machine-learning models. Experimental results demonstrate a 95.536% state-of-the-art average binary classification accuracy across all seven datasets for both models, proving both the miRNA's useful indication of cancer and the promise of deep learning approaches for future research into robust and generalized prediction mechanisms of cancer. Our full process utilizing the R programming language, including datasets, trained models, and results, are available at
https://github.com/TheClassicTechno/miRNACancerClassification.

Huang, Yanlin

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Yanlin Huang,
Xinyi Zhang

Abstract Name: **Relative Clause in Tibetan**

The aim of this study is to analyze the formation of Relative Clauses (hereafter RC) in Central Tibetan (Phjuik). Previous studies have suggested that the Tibetan relativization is a type of nominalization with multiple variations (pa, sa, mkhan, yag; DeLancey 1999). We elicited 328 words and sentences from two Central Tibetan speakers. Their ages range from late 20 to early 30, both from India, currently living in the United States. The current study confirms and extends previous findings in two ways: (1) Out of 4, three variants were confirmed, and (2) an additional vowel /i/ was found to follow the three variants, resulting in pronunciation change. As DeLancey (1999)'s data is from a female speaker in her 60's, the variant lost and a vowel addition could be due to a generation difference. An alternative explanation, especially on the /i/ vowel addition was explored in detail. /i/ vowel also appears in other noun phrases (hereafter NP), such as possessive NPs and genitive NPs. As RC is a type of NP in Tibetan, we propose that RC should be analyzed as a type of case, similar to possessive case and genitive case. The advantage of this proposal will be further discussed in terms of grammatical paradigm uniformity.

Hubbart, Hannah

Institution: *MN - Gustavus Adolphus College*

Discipline: Nursing/Health Science

Author/Contributors:
Hannah Hubbart,
Ella Ruble

Abstract Name: **Exploring the Perceptions of Pre-Health Students who Engage in an Interdisciplinary Approach to Learning**

Background/Significance: Interprofessional education involves two or more health professions that collectively create and cultivate a collaborative learning environment with the goal of creating skills and attitudes that result in desired team behaviors (Buring et al., 2009). Minimal opportunities exist for interdisciplinary collaboration between pre-health students at liberal arts institutions, particularly nursing and athletic training. This may potentially hinder creativity and skill development essential for successful patient care. Creative pedagogical strategies that develop interprofessional collaboration abilities are needed at institutions where there is limited opportunity for actual interprofessional collaboration. Purpose: The purpose of this research study was to explore the perception of pre-health students who engaged in an interdisciplinary approach to learning. Methods: This qualitative study utilized Elo and Kängas' (2007) descriptive content analysis approach to complete a secondary analysis of group exam reflections from an unfolding case study. Ninety-three pre-health student responses were analyzed at one rural, liberal arts college in the Midwest. The reflections consisted of two open ended questions about working in groups, focusing on the effectiveness of the group, behaviors, and application to future professional roles. This study was exempt from IRB oversight. Findings: Preliminary findings indicate that open respectful communication, open mindedness, and working with a team with different skills/perspectives were behaviors that positively impacted collaboration. Students indicated the need to integrate these behaviors when working with other health care professionals to maximize learning resulting in comprehensive patient care.

Huchthausen, Rachel

Institution: *NY - Houghton College*

Discipline: English/Linguistics

Author/Contributors:
Rachel Huchthausen

Abstract Name: **Musical Ekphrastic Poetry: Writing for Social and Intellectual Listening**

In his article "What is Ekphrasis For?," Simon Goldhill writes that ekphrasis "is designed to produce a viewing subject. We read to become lookers, and poems are written to educate and direct viewing as a social and intellectual process." While ekphrasis traditionally refers to poetry written in response to a work of visual art, including W.H. Auden's "Musée des Beaux Arts" and William Carlos Williams' "Landscape with the Fall of Icarus" in reference to Pieter Brueghel the Elder's paintingLandscape with the Fall of Icarus, ekphrasis may also refer to poetry written in response to music. Thus, in musical ekphrastic poetry, we read to become listeners, with ekphrastic poems serving to direct this listening as a social and intellectual process. Poems from Langston Hughes' collection The Weary Blues might provide models for this type of ekphrastic poetry based on jazz music. Indeed, Hughes' ekphrastic-type poems direct the listener to engage more fully with the musical genre through the presentation of its social context. Following a similar purpose, I will research the social, historical, musical, and literary contexts of a series of solo classical piano works of contrasting styles, nationalities, and periods (by Bach, Clementi, Liszt, and Prokofiev, for example). Following the example of Hughes, Williams, and Auden, I will write my own ekphrastic poetry based on these musical works, engaging with these contexts as well as the formal structure, musical language, and style of the works in order to guide listeners in social and intellectual listening. Unlike visual art, in which viewers and creators are distinct, those who experience musical works—the listeners—include both the audience and performer. Thus, I intend to explore through these poems how musical ekphrasis might also guide the listener-performer through the practice and presentation of the musical work.

Hucker, Katie

Institution: ***VA - Virginia Tech***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Katie Hucker,
Irene Johns

Abstract Name: Low-cost Multispectral Camera for NIR Imaging Analysis

Low-cost multispectral imaging is critical for applications in agriculture, infrastructure, and disaster planning by enabling detection of information beyond human vision or Red-Green-Blue (RGB) cameras. Most of these applications use an Unmanned Aerial Vehicle (UAV) as a platform to carry the sensor payload, and thus require lightweight and inexpensive imaging systems. The current study aims to develop and test a simple, low-cost, yet reliable multispectral camera payload for target detection. By extending the 400 to 700nm range of visible light, we can highlight features that are otherwise unnoticeable by the human eye or digital camera, such as soil moisture levels. Through the development of a low-cost multispectral imaging payload, we will harness near infrared wavelengths for target identification purposes. The camera is developed around a Raspberry Pi (RPi) 4B computer and four different Pi camera modules: two RPi RGB modules and two RPi NoIR V2 camera modules. A python script adapted from existing packages is used to trigger each camera synchronously, simulating flight computer-controller automated data capture. To highlight different wavelengths in the captured spectrum, the NoIR camera modules have been modified by adding either a red or blue gel filter. We will report on ground testing on targets of various sizes, materials, colors, and temperatures to determine detection accuracy. The captured images will be compared against the images taken from a commercial off-the-shelf multispectral camera.

Hughes, Jessica

Institution: ***PA - Millersville University***

Discipline: FAN Abstract

Author/Contributors:
Jessica Hughes

Abstract Name: Embedding social science research in an undergraduate communication course

In this presentation, I will describe and share open educational resources for a semester-long social science research project in an undergraduate communication theory course. This project 1) enables students to understand how theories connect to everyday practices, and 2) gives students practice using ethnographic and discourse analytic methods. More specifically, students are asked to conduct participant observation, write fieldnotes, and analyze media around one communicative context that they are interested and involved in (e.g., sports, friendships, professional communication). Scaffolded activities shared in this presentation invite students to note and analyze how people communicate in these contexts and what people say about communication in these contexts. After gathering data for several weeks, students are then asked to articulate and evaluate practical theories of communication (Craig, 2006)–that is, everyday ideas about what communication is, does, and should be/do–that are evident in the context they studied. Through this project, students become theorists as well as researchers and gain an appreciation for the real-world roots of academic theories.

Hughes, Reilly

Institution: *PA - Lafayette College*

Discipline: Economics

Author/Contributors:
Reilly Hughes

Abstract Name: **The Effect of Abortion Policies on Maternal Income and Employment Status**

In the United States of America, state-specific restrictive abortion policies could impact maternal employment status and income. The overturn of Roe v. Wade in 2022 has led abortion to become the subject of debate that heavily differs within each state. From, 2015 to 2019, each U.S. state was allowed to enforce its abortion policy providing it adhered to the federal statute of an allowance of abortion before viability (≈ 24 weeks). This statute also deemed that the state could not place regulations on abortion at all within the first trimester (≈12-13 weeks). In the second trimester (post-first trimester, but pre-viability) the state could regulate but not ban abortion. This freedom permitted states to enforce the federal statute with a restrictive gestational week limit, or apply a nonrestrictive statute enforcing their own longer gestational week limit. Using the state-level data on gestational week limits, this paper estimates the impact of restrictive abortion policies on maternal employment status and income within various education and socioeconomic groups. The expected outcome is that restrictive abortion policies lower maternal income and employment status.

Human, Joshua

Institution: *AR - John Brown University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Joshua Human

Abstract Name: **The Communal Story of Faith and Game: A Defense of Dungeons & Dragons from a Christian Perspective**

Fictional storytelling has often been viewed suspiciously by Christians, and fantasy role-playing games like Dungeons and Dragons (D&D) are often viewed most skeptically, as people claim that these games lead to occultism, satanism, and escapism. This paper will explore the idea that, because D&D is centered around the act of communal storytelling, it contains the potential to be a creative Christian practice. The argument presented in this paper is based on a Christian defense of literature, which will then be expanded upon by exploring the importance of oral storytelling and community in Christianity. Part of the argument will be devoted to arguing against unsavory allegations made about D&D, but it will focus primarily on the positive aspects of D&D, such as the potential to increase empathetic understanding within Christians. One essential aspect of Christian practice is community with other believers, and D&D's primary focus on communal, collaborative storytelling allows one to practice this aspect of their faith in a unique way. To examine the importance of community in storytelling, this paper will also examine the friendship between J. R. R. Tolkien and C. S. Lewis, two Christians whose collaborative relationship was essential to their writing. Achieving a new perspective on D&D is important because it is a game that is still viewed skeptically by Christians today. In particular, this paper will examine the aspects of communal practice in Christian faith, Christian empathetic response, and the imago Dei. The argument presented will show the ways in which D&D can help Christians understand these topics more fully and provide a setting where these qualities can be practiced.

Humphrey, Jaden

Institution: *OH - University of Findlay*

Discipline: Biology

Author/Contributors:
Cole Condon *Zach Meyer* *Madyson Hetsler,*
Nathan Osborn *Jaden Humphrey* *Lauryn Steele*

Abstract Name: **Monitoring Antibiotic Resistant Populations as a Correlative to Water Quality**

Agricultural land use can have adverse effects on the surrounding waterways, which may cause environmental and economical disturbances including but not limited to species assemblage disruption, loss of habitat and wildlife and human health impacts. There is a need to monitor in vivo aquatic systems, specifically those in agricultural areas, to not only provide a more holistic view into the correlation between agriculture land use and aquatic environmental disruption but also to develop more succinct and effective monitoring and management guidelines. The Blanchard River serves as an excellent model system suitable for monitoring antimicrobial resistant microbe sustainability within a highly agricultural area that serves as a contributor to the Lake Erie basin. Several indicators suggest that the Blanchard River watershed may provide a suitable habitat for the antibiotic resistant microbes including MRSA (methicillin resistant S. aureus). Outside nosocomial infections, minimal research has been completed to determine the reservoirs of MRSA and other resistant microbes. One hundred and twenty-six sites within the Blanchard River and its tributaries were monitored for antibiotic resistant microbes including MRSA. All sites had antibiotic resistant populations while twenty-six of the sites harbored MRSA. Sixteen Areas of Concern (AOCs) were chosen in conjunction with the Blanchard River Watershed Partnership to determine if traditional water quality measures of E. coli concentrations,nutrient levels and macroinvertebrate populations correlate with antibiotic concentrations and resistant populations. Additionally, microcystin concentrations were measured as they are known to enhance horizontal transfer of antibiotic resistance genes. There is no correlation between land usage or antibiotic concentrations and the presence of antibiotic resistant microbes. There were weak correlations between antibiotic concentrations and pollution resistant macroinvertebrates and a weak negative correlation between E. coli levels and pollution sensitive macroinvertebrates.

Hunt, Andrew

Institution: *WI - Chippewa Valley Technical College*

Discipline: Political Science

Author/Contributors:
Andrew Hunt

Abstract Name: **On the Correlation Between Political Beliefs, Individual Demographics, and Sexual Fetishes**

Although sexual fetishes are relatively common and well-known, there is a vacuum of research surrounding the subject. The majority of the literature that exists focuses on trauma or stigma surrounding fetishes. This research project aims to close this gap of information by studying demographic and political correlations of those who practice fetishistic behavior. While all these factors were considered, identifying if there was a correlation between political identity and fetish interest levels was the original objective of this research. A total of 138 participants responded to a survey, 111 of whom answered all questions, that included questions about age, sexual identity, sexual orientation, political identity, and fetish interest levels. The responses from the 27 participants who did not complete the survey were ignored. The survey was distributed across Reddit and a server on Discord as a means of reaching a variety of subjects. The survey was initially posted on r/SampleSize, but because it had a significant liberal skew in results, it was also posted to r/AskConservatives to obtain an adequate sample of the key demographic.

Hunt, McKenna

Institution: *UT - University of Utah*

Discipline: Public Health

Author/Contributors:
McKenna Hunt *Mediatrice Niyonsaba* *Jean Marie Uwitonze*
Jeanne D'Arc Nyinawankusi *Justine Davies* *Rebecca Maine*
Menelas Nkeshimana *Sudha Jayaraman* *Melissa Watt*

Abstract Name: **Challenges to the Ability of EMS Systems to Locate an Emergency in Low-Resource Settings: A Qualitative Study**

Introduction: Efficient pre-hospital emergency care can significantly improve healthcare outcomes. Difficulty locating the emergency is a significant challenge that contributes to inefficiency in pre-hospital care. The goal of this study was to describe challenges emergency medical response (EMS) teams face in Rwanda locating emergencies and to explore potential opportunities for improvement. Methods: We conducted 21 in-depth interviews with four stakeholder groups representing the EMS response system in Rwanda: ambulance dispatchers, ambulance field staff, receiving hospital staff, and policymakers. Semi-structured interview guides covered participants' perspectives on the challenges EMS systems face in locating an emergency, how challenges impact quality of pre-hospital care, and what opportunities exist for process and tool development. Audio recorded interviews lasted 30-90 minutes each. Transcripts were coded using NVivo into three domains: the process of locating an emergency, impacts of challenges, and opportunities for processes and tools. Results: The current process of locating an emergency was hampered by the lack of supportive technology, the dependence on individual's local knowledge to describe the location, and inefficient communication channels to share location details between parties (caller, dispatch, ambulance). Three themes emerged related to the impact of challenges in locating an emergency: increased time response, inconsistencies in rapid response based on an individual's knowledge of the area, and inefficient communication between the caller, dispatch, and ambulance. Three more themes emerged related to opportunities to improve efficient location of emergencies: technology to geolocate an emergency accurately and better time response, improvements in communication to allow for ambulance access to real-time interaction between the caller and dispatch, and better location data from the public. Conclusion: Timely EMS response is essential for optimal clinical outcomes, but significant challenges exist in locating emergencies. There is an urgent need to implement locally relevant solutions to improve the efficient location of emergencies in Kigali, Rwanda.

Huntinghouse, Danielle

Institution: *FL - University of West Florida*

Discipline: Biology

Author/Contributors:
Danielle Huntinghouse *Joe Lepo* *Cassie Owens,*
Emma Bowland

Abstract Name: **Biocides Effective Against Potentially Human-Pathogenic Gym Microbiota**

Potential human pathogens were previously found at the University of West Florida Health, Leisure and Sports Facilities. These microorganisms include bacteria, such as Escherichia coli and Staphylococcus aureus, lipid-dependent human-associated yeasts, such as Malassezia spp., and keratinolytic skin molds, all of which may affect health of gym users, supporting effective sanitization. Malassezia spp. inhabit hair follicles and skin folds of humans and exacerbate acne and cause other skin diseases. Keratinolytic skin molds digest the protein keratin of skin, hair, and nails to cause "tinea" diseases such as athletes' foot, ringworm, and nail infections. Effective sanitization can improve safety of gym facilities. During a previous project, we found that Quat-Stat SCTM, the disinfectant used at the HLS facilities, was effective in controlling growth, and therefore spread, of the microbes listed. Quat-Stat is a proprietary mix of quaternary ammonium salts described on the label as a "disinfectant, virucide, fungicide, and a control against mold and mildew." Results from our previous work supported that Quat-Stat is effective in inhibiting the growth of E. coli and S. aureus but was not effective against M. furfur. Household bleach consistently performed better than Quat-Stat, but was not considered a better product because of its unpleasant odor and potential harm to users' skin. In this study, we broadened prior knowledge by evaluating additional disinfectants being used at the HLSagainst these pathogens, along with exploring other biocides, especially "-azoles" (e.g., clotrimazole, an antifungal medication), found in products targeted to consumers for treating conditions caused by some of them. We tested selected biocides using Kirby-Bauer Disk Diffusion to identify promising agents, and Phenol Coefficients to assess their efficacy. Certain chemical classes of biocides had greater in vitro inhibitory effects on skin yeasts and dermatophytic fungi than others.

Huntley, Melissa

Institution: *MN - Minnesota State University - Mankato*

Discipline: Biology

Author/Contributors:
Melissa Huntley

Abstract Name: **Knowledge and Awareness of Naloxone Training among Dental Professionals**

Purpose: Due to the significant prevalence of dental anxiety, many people decide to self-medicate in order to cope with their fear of being in a dental chair. As a result of this and a rise in opioid use nationwide, dental professionals are increasingly likely to see the misuse of these substances. They must be equipped to handle any related medical emergencies .Methods: After institutional review board approval, a cross-sectional, web-based, anonymous survey was sent via a closed social media group for dental hygienists across the United States. Descriptive statistics were used to describe the dental hygienists' knowledge and awareness of naloxone and formal naloxone training. The short survey was administered with the data collection tool, Qualtrics with a convenience sample size collected. The data collected through our survey participants will be analyzed on statistical software, SPSS. An evaluation of the knowledge and awareness of naloxone training among dental professionals will be determined using a Chi-square analysis, Mantel-Haenszel test and Mann-Whitney test to interpret our findings. Results: Results are pending statistical analysis. Conclusion: Initial conclusions determine the knowledge and awareness of naloxone training among dental professionals is lacking and needs to be reviewed and improved. Further conclusions are pending additional statistical analysis using the software, SPSS.

Hurley, Olivia

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Olivia Hurley *Austin Lynn* *Tracy Quirk*

Abstract Name: **Phragmites australis Sexual Reproductive Effort: Potential for Hybridization and Recovery Following Die-back in the Lower Mississippi River Delta**

Phragmites australis is a crucial plant for promoting coastal wetland soil stability. In the Mississippi River Delta, it is threatened by a recent case of die-back. Phragmites typically reproduce asexually through underground rhizomes, but recent studies point to the importance of sexual reproduction through pollen and seeds in die-back sites. Sexual reproduction is critical for stressed plants because it increases genetic variability and their capacity to overcome environmental stressors, as recently found in die-back regions in Europe. If similar trends are found in the Mississippi River Delta, then recruitment through seed and hybridization between lineages (Gulf, Delta, and European) could present a promising mechanism forPhragmites regeneration following die-back. We tested for increased sexual reproductive effort in die-back sites and hybridization potential by determining flowering time and collecting and staining pollen from the three lineages.With regards to reproductive effort in recovering dieback sites, we found significantly greater pollen viability in recovering European-type dieback sites as opposed to healthy sites, indicating a relatively high capacity for sexual reproduction in this lineage. Gulf-type Phragmites anthers completely lacked pollen, while Delta-type Phragmites showed very low pollen production. Flowering periods for Gulf-type and Delta-type overlap in the late fall, suggesting hybridization may occur if either haplotype ever produces viable pollen and ovules. However, European-type Phragmites flowered much earlier, producing pollen from June-August. These data, combined with evidence for temporal isolation from different flowering times, suggest that hybridization between Phragmites haplotypes in the lower MRD is unlikely. With regards to broader impacts for Louisiana coastal restoration, our study suggests that finding a cross-lineage Phragmites hybrid will not be a viable method for die-back site restoration, while greater overall pollen production and increased pollen production following die-back suggests that European-type Phragmites patches have potential to recover from dieback through sexual reproduction.

Hussein, Manal

Institution: *CA - University of California - Riverside*

Discipline: **Biology**

Author/Contributors:
Nabeel Shaikh,
Phyu Htet,
Trevor Zimmerman-Thompson,
Manal Hussein,
Wendy Saltzman

Abstract Name: **Changes in Parental Responsiveness across the Reproductive Cycle in the Biparental California Mouse**

In mammals, maternal behavior is activated by hormonal changes occurring during pregnancy and lactation. Females typically become highly attracted to infants at the end of pregnancy, whereas attraction to infants can wane across the lactational period. In many rodents, however, females gestate and lactate concurrently; it is not clear how maternal responsiveness changes in these species. Moreover, very little is known about fathers' responses to infants across their mates' reproductive cycle. We characterized the parental behavior of mothers and fathers across overlapping gestation and lactation periods in the monogamous, biparental California mouse (Peromyscus californicus), in which females are usually both pregnant and lactating and fathers perform comparable amounts of offspring care as mothers. Each parent was introduced to a young, unrelated pup for 10 minutes at four different time points across pregnancy/lactation, and behavior was compared across time points and between the sexes. Behavioral responses to pups did not change significantly across time points in either sex. At all four time points, however, fathers spent significantly more time than mothers performing parental behavior (i.e., licking, grooming, and huddling) toward the stimulus pup. These findings suggest that concurrent lactation might inhibit the rise in maternal responsiveness that would otherwise occur during late pregnancy, and that parental responsiveness toward infants is higher in breeding males than females in this biparental species.

Hutchinson, Michael

Institution: *PA - Widener University*

Discipline: **Architectural Engineering/Construction Management**

Author/Contributors:
Jacqueline Loeliger,
Michael Hutchinson,
Madeline Reynolds,
Amanda DiAlessandro

Abstract Name: **HVAC Design of a Performing Arts Center to be Located in Sidney, Australia**

This work was done as an entry tothe 2022 HVAC Design Calculation Competition being held by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The complete HVAC design calculations were performed for a large (over 200,000 ft2, over 500 spaces) higher education performing arts building placed in Sydney, Australia.The calculations required the analysis of heating and cooling loads, and determination of the necessary airflow to each space based on usage and size. The HVAC system was then designed and optimized to maximize the building energy efficiency. The project demonstrated compliance with four standards from ASHRAE: 55, 62.1, 90.1, and 189.1, which are thermal comfort, ventilation for indoor air quality, energy standards, and high efficiency, respectively. As first steps, load calculations were performed by hand to find peak amounts of cooling required, and the necessary airflows were determined to meet the required ventilation levels. Next, the use of Carrier's Hourly Analysis Program (HAP) allowed for a more robust look at each of the five hundred and forty-four rooms. This allowed for structural coordination of placing a roof top unit to serve half of the top floor of the building. Special consideration was given to energy efficiency and sustainability. The energy intensity usage was found to be 27.8 kBtu/ft2 which is compliant with expectations from the New Buildings Institute to be within 30 kBtu/ft2. Overall, the project came together to generate detailed floor plans of the entire building and a detailed model to represent the finalized building layout.

Huth, Ava

Institution: *IA - Iowa State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Ava Huth

Abstract Name: **Molecule Tilt Angles and Varying Temperature Environments in Self Assembled Monolayers (SAM)**

The sub-nanometer odd-even parity effect on self-assembled monolayers (SAMs) acts oppositely with Ag-based and Au-based substrates. Previous studies investigating this have examined surface roughness characteristics with probing liquids ranging in polarity. These studies failed to consider the effect of surface density on monolayer tilt angle. In this work, we used Ag- and Au-based substrates and varying temperature environments to investigate this odd-even parity further. We report the wetting behavior of SAMs by investigating contact angle of a polar and nonpolar probing liquid on Ag and Au-based substrates in different temperature environments. Polar probing liquids showed a larger disparity between substrates at lower temperatures, and increased temperatures showed converging contact angle measurements. Nonpolar probing liquids showed opposite behavior, diverging as they increased. Based on these observations, we propose that surface roughness is not solely responsible for wetting behavior differences between substrates, and we conclude that there exist temperature-sensitive differences in molecule tilt angles that partially determine SAM behavior.

Huynh, Cristy

Institution: *NC - Gaston College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Cristy Huynh *Johnathon Wilbanks* *Luisa Osorio Rada*
Haeun Chung

Abstract Name: **Watermelon Malate Dehydrogenase and Two Mutants**

Malate Dehydrogenase is an enzyme found in the glyoxysomes and mitochondria of plant cells. In glyoxysomes, Malate Dehydrogenase is part of the glyoxylate cycle which converts fatty acids to sugars. In the mitochondria, Malate Dehydrogenase is the last enzyme of the citric acid cycle. The citric acid cycle produces NADH and FADH2, two essential reactants in the electron transport chain for generating cellular energy. Malate Dehydrogenase catalyzes the reversible oxidation-reduction reaction of malate and NAD+ to oxaloacetate and NADH. Malate Dehydrogenase or MDH is an enzyme that converts fatty acids to sugars in glyoxysomes and catalyzes the reversible oxidation-reduction reaction of malate and NAD+ to oxaloacetate and NADH in the mitochondria. This study aims to investigate the effect of two mutations, D132A and R124K, on the activity of glyoxysomal watermelon MDH and determine the role of these two amino acids in the structure of the enzyme. We hypothesize that R124K will decrease activity due to broken intermolecular forces between the enzyme and substrate/ cofactor for R124K. D132A will also decrease in activity because of a disruption of a hydrogen bond in the loop region, which may affect the ability of the loop to close effectively. PYMOL was used to generate the mutated protein structures of 1SMK, and the lowest energy conformations were identified using SPRUCE and SZYBKI. The effects of the mutations were analyzed using computer modeling by superimposing the mutated versions on the crystal structure of the human mitochondrial MDH (4WLU). The activity of the mutants was compared to the wild-type using kinetic assays.In conclusion, the initial rates, specific activity, and turnover numbers calculated for the two mutants were significantly lower than the wild-type confirming that both mutations hindered the wild-type's activity efficiency.

Huynh, Khang

Institution: *MN - St. Olaf College*

Discipline: **Mathematics**

Author/Contributors:
Annika Cleven,
Khang Huynh,
Rachel Stumpf,
Jaime Davila,
Douglas Beussman

Abstract Name: **Human Scent Analysis in Support of Tracking Dogs**

Tracking dogs can follow the scent of a person for more than a mile after they have left the trail. The current scientific hypothesis about how this is possible involves dogs smelling the volatile organic compounds (VOCs) that emanate from dead skin cells shed as a person moves. However, data from tracking dogs is not admissible in a court case as it is not understood how this scientifically occurs. Our data involves swabs of an individual's left and right arms, using the technique of Gas Chromatography Mass Spectrometry (GCMS) to identify and analyze the amounts of compounds that make up a scent. We have found that the data of an individual's left and right arms is more correlated than two random people in the data set, suggesting that each individual has a unique scent profile. Through the comparison of left and right arms from the same individual we have noticed the same compound is not present in both due to the necessity of the GCMS reaching a threshold amount for a compound to be recognized. Using Principal Component Analysis (PCA) we found that 23.1% of the variation in individuals can be explained through the first two principal components. PCA has also determined that heptanal, acetone, and hexanal, which are commonly found in every individual, are the compounds that explain the most variation between scents. Furthermore, PCA shows that there is a difference in clustering between children (under 18 years old) and adults (18+ years old). Our investigation has shown that the age of an individual contributes to the scent profile, an individual is more correlated to oneself than another, and that there are top VOCs that contribute to the variation in individuals scent profiles.

Huzaifa, Muhammad

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Muhammad Huzaifa

Abstract Name: **A Smart Door-lock using Facial Recognition**

The vulnerability of traditional door locks against lock picking and minimizing lost key replacement cost, and remote locking or unlocking capabilities have persuaded house owners towards a smart door lock-based system for ensuring security at their home. Primarily these smart locks use fingerprints, keypads, and/or RFID tags to authenticate homeowners and open or close the locks. Due to the nature of the authentication, using fingerprints, keypads, or RFID tags, it is difficult for senior citizens as well as people with disabilities to use these door locks. In this project, a Smart Door Lock is proposed using Face Recognition for security and accessibility purposes. A prototype has been built for the proposed smart door lock using a Raspberry Pi device and a camera module. Motion sensors are used to ensure the camera only starts when it detects a movement to avoid excessive use of energy. An LED display is used for the display of the awaiting command with the user. To enable further communication with the user, a microphone and speaker module are also integrated with the device. Python is used for programming the device. Furthermore, a user-accessible app is built by which homeowners can control the lock remotely through their phones. Through experimentation, it is anticipated to determine the accuracy of the device to identify house owners along with the average response time and the user accessibility of the mobile app and the device.

Ibarra, Alba

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: Biology

Author/Contributors:
Alba Ibarra,
Ben Flicker

Abstract Name: **(The complete mitochondrial genome of North American Hirundo rustica, phylogenetic analysis and population studies in central New Mexico)**

The barn swallow (Hirundo rustica) is a cosmopolitan species of bird that build their nests using mud and saliva along with feathers and other fibers. It is one of just 57 species of mud nest building birds in the world (Jung et al., 2021). Over the fall of 2022 and spring of 2023, we will study the population of barn swallows on the grounds of The University of New Mexico – Valencia Campus. DNA was extracted using Qiagen Powersoil Pro DNA extraction kit (Qiagen) from mud taken from nests built on buildings around campus. DNA was amplified and libraries prepared using Nextera DNA flex library prep kit (Illumina). Sequencing done on the Illumina iSeq 100 at the University of New Mexico – Valencia Campus. We will present the assembled and annotated mitochondrial genome. We will compare this genome to publicly available mitochondrial genomes in the genusHirundofrom around the world. We will use phylogenetic analyses to compare this first North American representative genome to the many European, Asian, Mediterranean, and Australian representatives already available. We will discuss brood size and nest usage in comparison to male tail feather length and tail color patterns known to be under sexual selective pressures in the species. We will also describe the incubation behaviors of the species in our sample population. Lastly, we will estimate population change from year to year.

Ibrahim, Ahmed

Institution: *EGY - The American University in Cairo*

Discipline: Biology

Author/Contributors:
Ahmed Ibrahim

Abstract Name: **Antimicrobial Activity Assessment of a Potential Anti-cancer Peptide**

Cancer is one of the most dangerous diseases in the world, especially with the increasing death rates over the years. Conventional treatment approaches, such as chemotherapy, radiotherapy, and surgery, are still not very effective, in addition to cancer cells acquiring resistance against some of them. A novel approach for treating cancer is anticancer peptides which target cancer cells specifically inhibiting their proliferation and migration. Anticancer peptides have higher efficiency compared to conventional therapies and cancer cells are less likely to develop resistance against them. The objective of this project is the characterization of the antimicrobial activity of a potential anticancer peptide to assess its safety on the microbiological level as a potential cancer drug. The peptide was obtained from metagenomics data retrieved from the Red Sea and was previously found to possess anticancer activity. The antimicrobial analysis was done using two approaches which are computational analysis using bioinformatics tools and wet lab analysis. Viable cell count assay, antimicrobial activity assay, and disk diffusion assay were conducted on gram-positive Staphylococcus aureus and gram-negative Escherichia coli bacterial strains, as representatives of the human microbiome. Computational analysis showed that the peptide has an α-helix secondary structure. In addition, the computationally predicted antimicrobial activity was estimated to be between 20% and 30%. The results of the lab experiments showed that the IC50 concentration of the peptide had a minimal antimicrobial effect against both S. aureus and E. coli, which is not significant. The average inhibition rate of the peptide was 14.7% on S. aureus and 9% on E. coli. Accordingly, it can be concluded that the potential anticancer peptide can be considered safe on the microbiological level and will not disrupt the human microbiome. Thus, further investigation can be done on the peptide to use it for cancer treatment.

Ibrahim, Muhaison

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Bryce Shoberg *Matt Laatsch* *Moriah Weiss*
Rebecca Boese *Muhaison Ibrahim* *Krysti Knoche Gupta*

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate cultures, one with La3+-rich media and one with Ca2+-rich media. Methylene blue is polymerized onto the surface of a glassy carbon electrode, then harvested bacteria or isolated enzyme is immobilized on the electrode by casting a mixture of the bacteria and tetrabutylammonium bromide (TBAB)-modified Nafion® onto the electrode surface. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria and isolated enzyme electrodes will be compared along with the electrode lifetimes.

Igot, Micah

Institution: ***TN - University of Tennessee at Knoxville***

Discipline: Psychology/Neuroscience

Author/Contributors:
Micah Igot *Arthur Castaneda* *Courtney Tolbert*
Veronique Zamora *Kalynn Schulz*

Abstract Name: The Effects of Gonadal Steroid Hormones on Perineuronal Nets and Parvalbumin Cells in the Ventromedial Hypothalamus and Bed Nucleus of the Stria Terminalis in c/57 Mice

Adolescence is a sensitive period for the organizing actions of gonadal steroid hormones on social behavior. However, the neurobiological mechanisms underlying steroid-dependent brain and behavioral maturation during adolescence are largely unknown. The development of extracellular matrix structures in the brain, perineuronal nets (PNNs), are associated with the timing of sensitive periods for experience-dependent plasticity in sensory systems. The current study is an important first step in understanding the role of PNNs in steroid-dependent organization of the brain during adolescence. We tested the hypothesis that adolescence is a sensitive period for steroid-dependent development of perineuronal nets in the ventromedial hypothalamus (VMH), a region of the hypothalamus important for social and reproductive behavioral function, and the Bed Nucleus of the Stria Terminalis (BnST), a limbic structure critical in endocrine function. We predict that gonadal steroid hormone exposure during the adolescent period, but not before or after, will increase the number of PNNs found in the VMH and the BnST. To further investigate this finding, we also analyzed Parvalbumin (PV) cell expression. PV cells are GABAergic inhibitory interneurons often surrounded by PNN's. In this study, male and female c/57 mice were first gonadectomized prior to puberty at 22 days of age. Subjects were surgically implanted with steroid hormone-containing or vehicle (blank) silastic capsules either before puberty (23-30d), during adolescence (40-47d), or after adolescence (63-70d). Female mice received estradiol-filled capsules, and male mice received testosterone-filled capsules. Brains were collected after seven days of steroid hormone or vehicle treatment for histological processing and analysis. Preliminary analysis of a subset of data reveals that female mice have more PNNs, on average. However analysis is still in progress for density of PNN and PV cell expression, and changes to the area size of these brain regions, of which the results will be presented at the conference.

Ihinger, Delia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Delia Ihinger *Michael Barrow* *Bri Jol*
Taylor Phillips *Tristan Wirkus* *Harry M. Jol*
Philip Reeder *Richard Freund*

Abstract Name: **Using Subsurface Imaging to Search for a Holocaust Mass Burial in Liepāja, Latvia**

Antisemitism and fascist indoctrination contributed to the genocide of millions of Jewish and other outcast people in the Holocaust before and during World War II. Today, the remains of thousands of people are missing. Liepāja, on the western Baltic coast of Latvia, is the only known Holocaust site to have video footage of one of the massacres. The footage depicts people being shot in a large trench and covered in sand with the local lighthouse visible, but the exact location of the burial was unknown. Ground penetrating radar (GPR), witness testimony, aerial photos, and coastal erosion analysis were used to attempt to locate the mass burial seen in the historical footage.
GPR antennae direct electromagnetic radio waves into the ground and record their returning reflections in lines. GPR lines are a form of subsurface imaging, which can be used to determine possible features in non-invasive archaeology by detecting subsurface contrasts. In Liepāja, a Sensors & Software pulseEKKO high frequency GPR system and Topcon self-leveling laser/receiver topography system were used. Data was collected using a 500mhz antennae in parallel lines, spaced every 0.25m, with a 0.02 step size in three grids sized 22m x 27m, 9m x 38m, and 11m x 13m and adjusted for changes in elevation. GPR lines were examined using EKKO_Project 5 software to locate features in subsurface materials.
A subsurface anomaly aligns with the position of the trench in the video. GPR lines, witness testimony, erosion analysis on the site, and aerial photos indicate the location of the trench. The located mass grave will be left undisturbed due to the Jewish religious custom of not exhuming the dead; however, those killed can now be memorialized by the local community. Further study is recommended to determine if other anomalies detected in GPR profiles are additional burials.

Ihm, Joanna

Institution: *MD - University of Maryland College Park*

Discipline: Business

Author/Contributors:
Aarushi Malhotra *Joanna Ihm* *Philip Mathew*
Soham Nagaokar *Rachel Antony* *Benjamin Bral*
Seth Gleason *Johnny Rajala* *Daniel Zhu*
Kyle Truong

Abstract Name: **Detecting Bias in Intelligent Autonomous Hiring Systems**

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Ikizer, Elif

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Miller *Elif Ikizer*

Abstract Name: **Exploring the Mediating Role of Social Dominance Orientation in Stigmatizing Attitudes Exhibited in Sports Fans**

While previous studies on sports fan environments reveal correlations between high sports fan identification and endorsement of sexist attitudes, the effect of sports fan identification on negative attitudes towards issues related to gender and sexuality outside of fan environments have not yet been investigated. In this study, we aim to examine the link between levels of sports fan identification and negative attitudes towards women, homosexual individuals, and transgender individuals. We predict that higher levels of sports fan identification will correlate with more negative attitudes toward women, homosexual individuals, and transgender individuals as compared to those with lower levels of sports fan identification. With level of sports fan identification as the predictor variable and stigmatizing attitudes as the outcome variables, correlational analyses will be performed to assess relationship between sports fan identification and attitudes toward women, homosexual individuals, and transgender individuals. The predictor variable will be measured using a composite score obtained from two measures evaluating sports fan identification, and the outcome variables will be obtained from three measures each separately designed to measure sexism, homophobia, and transphobia, respectively. Consistent with our hypotheses, we expect to find correlations between levels of sports fan identification and the specific attitude measures. Additionally, we will investigate political orientation and social dominance orientation as possible mechanisms underlying the connection between sports fan identification and attitudes towards women, homosexual individuals, and transgender individuals. These mechanisms will be investigated via mediation analyses; for example, we will explore whether the link between sports fan identification and attitudes toward women is mediated by social dominance orientation. This study is currently in progress and has received IRB approval. Data collection is scheduled to begin January 23, 2023 and conclude March 1, 2023. We anticipate all data analyses and report writing will be completed prior to the conference.

Imran, Noorullah

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Noorullah Imran *Shazia Bano* *Mohammad Saad* *Tayyaba Hasan*

Abstract Name: **Dual Function Antibody Conjugates (DFAC) as a Photoacoustic Imaging Probes for Image-Guided Oral Cancer Therapy**

Close to 50,000 Americans will be diagnosed with oral cancer this year. Despite using molecular targeted 2-dimensional fluorescence imaging to delineate tumor margins, the presence of residual microscopic diseased tissue, post-surgery, often leads to tumor recurrence. This is in part due to the inability of fluorescence imaging to accurately determine tumor depths. We here report the development of a dual function antibody conjugate (DFAC) comprising of a fluorophore (AF647) and a photoacoustic dye (IRDye800) conjugated to an anti-EGFR antibody (cetuximab) to compliment fluorescence imaging with 3-dimensional photoacoustic imaging to overcome this limitation.As DFACs usually interact with their target cells through receptor-mediated-endocytosis (RME), we recapitulated different steps of this process, in vitro, and evaluated the fluoresce and photoacoustic signals at timepoints representing its different stages: Free DFAC – mimicking DFAC in circulation, DFAC-NAL (DFAC conjugated to liposome surface) – mimicking target cell-surface-bound DFAC, and NAL-DFAC (DFAC encapsulated inside liposomes) – mimicking endocytosed DFAC. The presence of DFAC on the nanoliposomal surface in DFAC-NAL was confirmed by determining binding specificity to A431 cells (EGFR-positive) through confocal fluorescence microscopy and flow cytometry. DFAC and DFAC-NAL showed high binding to A431 cells, in contrast, the binding of NAL-DFAC was found to be significantly lower validating DFAC presence inside the liposomes. While the fluorescence signal for the different formulations showed minimal variations, photoacoustic signals for NAL-DFAC showed a significantly lower signal than the rest.In conclusion, our study indicates that DFAC conjugated on the surface of nanoliposomes produces a better photoacoustic signal than DFAC encapsulated inside nanoliposomes, suggesting that photoacoustic imaging performed at early timepoints of the RME process, when DFACs are bound to the cell-surface, could yield higher intensity signals. The broader implication of this study is to consider microenvironmental effects and timing of imaging of such probes for delineating tumor margins.

Inaganti, Rahul

Institution: *PA - Drexel University*

Discipline: Biology

Author/Contributors:
Rahul Inaganti

Abstract Name: **Wolbachia-Mediated Protection Fails Against the Fungal Pathogen, Beauveria Bassiana**

Aphids are destructive pests of many economically important crops. Parasitoid wasps and fungal pathogens are natural enemies of aphids that are often utilized to control their populations in agricultural settings. Aphids have established relationships with symbiotic bacteria which provide them with life sustaining nutrients or defense. The symbiont,Wolbachia, can protect the banana aphid,Pentalonia nigronervosa, a vector of the BBT virus, against the aphid-specific fungal pathogen,Pandora neoaphidis. However, symbiont protection is often species specific. To evaluate the specificity ofWolbachia'santi-fungal protection, a lab assay was conducted usingBeauveria bassiana, a generalist fungus used to control a wide range of insect pests. Cohorts from fourWolbachia-infected (W+) and four uninfected (W-) banana aphid lines were exposed toBeauveriausing two different methods: a spray and dunking method. The number of aphids that survived, sporulated, or died from exposure were recorded over ten days. Results show that W- and W+ aphids were equally susceptible toBeauveria, experiencing similar rates of sporulation and survival, $t(34) = 2.03$, $p = .72$. This finding highlights the specificity of symbiont-mediated protection and suggests thatWolbachia'santi-fungal defense is not effective against all entomopathogenic fungi. Understanding how endosymbionts in aphid species influence host-pathogen interactions may lead to the development of more effective biological control strategies.

Ineza, Raissa Natacha

Institution: *MN - Minnesota State University - Mankato*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Raissa Natacha Ineza,
Jace Oldham

Abstract Name: **Effectiveness of Steel Wires in Compressed Stabilized Earth Bricks (CSEB)**

The purpose of this research project is to contribute to the development of interlocking Compressed Stabilized Earth Bricks (CSEBs) by studying crucial engineering properties (e.g., strength) of various highly compressed soil/stabilizers mixes of CSEBs. One of the many approaches involves steel wires' effect on the compressive strength and absorption of CESBs. We will examine three sets of samples with varying mix proportions (soil with 70% sand and 30% fines), then stabilize them with 10% Portland Cement. Two of the three sets will contain 1-inch cut steel wires. Afterward, our soil samples will be compressed with a (16-20) MPa hydraulic pressure compactor. Through experimentation and examination, the study will contribute to the knowledge of this evolving, aspiring green technology manufacturing environmental-friendly CSEBs. Unlike ordinary and modern construction materials like concrete and Fired Clay Bricks (FCB), which foster environmental degradation, manufacturing CSEBs poses a potential solution for effective, environmentally friendly building materials. Furthermore, they are energy efficient and economical compared to the production of FCBs that significantly damage our environment (e.g., global warming and Ozone depletion) due to the high energy levels. Along with being environmentally friendly, there are numerous other benefits of CSEBs. For instance, they lower transportation costs, promote local resources, develop the local economy rather than spending on import materials and improve access to quality housing for many people. Ultimately, our goal is to contribute to developing CSEBs as green construction materials through mechanical and chemical stabilization techniques. The anticipated results are that incorporating steel wires in CSEBs will reinforce compression and absorption.

Innes, Kari-Anne

Institution: ***PA - Slippery Rock University of Pennsylvania***

Discipline: FAN Abstract

Author/Contributors:
Kari-Anne Innes

Abstract Name: Seussical, an Audience that Grew Three Sizes: Community Engaged Learning and Studies in Audience Development

As campuses build new arts facilities to attract students of all disciplines, those seats need filled with audiences from the campus and larger community. Not only does this require the talents of a creative team to provide the art, but alsothe research and creative inquiry of other disciplines, such as marketing and community engagement. This short talk will share the experience of developing and teaching the course Studies in Audience Development using community engaged learning techniques in order to promote Slippery Rock University Department of Theatre's musical production of Seussical. According to theNational Endowment for the Arts, a direct correlation exists between arts participation and higher levels of education ("2017 Survey of Public Participation"). Therefore, in order to build future audiences, it is imperative that the arts be central to all education levels. Students in the course will use the Doug Borwick's Building Communities, Not Audiences: The Future of the Arts in the United States, Bob Harlow's, Taking Out the Guesswork: A Guide to Using Research to Build Arts Audiences, and the Arts Education Navigator to research, write, and implement a marketing plan aimed at cultivating young audiences, as well as identifying and addressing barriers to arts education and participation in schools. Students will interview and survey partner schools to create services thataddress these barriers. One objective is to fill the university's 700-seat newly remodeled Miller Theater with elementary and middle school students in two matinee performances. The larger goal is for undergraduate researchers to engage the community increating audiences of the future.The short talk will document the process of identifying campus and community partners, receiving designation as a community engaged learning course, the undergraduate student research process and findings, and student learning outcomes.

Insinga, Rocky

Institution: ***GA - Kennesaw State University***

Discipline: Architectural and Interior Design

Author/Contributors:
Rocky Insinga

Abstract Name: The Architectural History of Marietta, Georgia's No. 1 Engine House

The transition from volunteer-run to professional fire departments in mid to late 1800's America led to a dramatic shift in the architectural style of new fire stations. Marietta, Georgia's No. 1 Engine House, built in 1886, reconciled a heroic volunteer department with an architectural style influenced by the professional departments of its time in larger cities. Unlike many other historic buildings in Marietta, the No. 1 Engine House, which has a similarly long and venerable history, has been of little scholarly interest. This is likely due to its architecture resembling an ordinary commercial building rather than an integral part of an Antebellum town. This case study of Marietta's No. 1 Engine House was conducted by comparing historic local documents and photographs against general trends in American fire station design of the time. Towns are rarely shaped by their own needs. In this case, nationwide trends compelled the small town of Marietta to adopt an architectural style contrary to its own aesthetic needs.

Intenque, Dabana

Institution: *MA - Bridgewater State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Dabana Intenque

Abstract Name: **Deliver Website "Atlantic"**

Researcher: Dabana Intenque Presentation title: Atlantic websiteResearch Focus: Computer Science School: Bridgewater State University Presentation Type: Oral Presentation Abstract: Developing the "Atlantic website" to facilitate, help and support individuals online with easy and fast access to the product.Dabana Intenque, Bridgewater State University. Today the internet and cellphone play a huge role in our daily life. Most of the time cell phone can be helpful when you want to buy any product online. It is easy on some continents and harder on another continent. Ex: In Africa. Growing up in west Africa, I witnessed the difficulty there a lack of online websites in my native country. The "Atlantic website" focuses on solving the problem of the countries that do not have an online service in Africa.Using Amazon, Walmart, Apple, and Target as a prototype. Used full stack, including both the client and server side. Node.js as the main framework. Looking into different applications came up with the conclusion of using JavaScript, React, type script as a programming language, and many other technologies, such as HTML, CSS, Bootstrap, GIT, MySQL database, and Heroku cloud web hosting services provided by salesforce.In addition, the goal is to publish the Atlantic website to a cloud web hosting service and keep the Atlantic secure so users can benefit from the research work. The "Atlantic website" will improve people's daily life. In places that lack online services. It will cost less, is easy to access, and is fast for users to get the products at home.

Irfan, Hanya

Institution: *FL - University of Central Florida*

Discipline: **Nursing/Health Science**

Author/Contributors:
Hanya Irfan

Abstract Name: **ASSOCIATIONS BETWEEN SHAME AND GUILT, SELF-ESTEEM, AND HEALTH RISK BEHAVIOR AMONG UNDERGRADUATE STUDENTS**

Health Risk Behavior (HRB) is defined as behavior that increases the likelihood of adverse outcomes: injury, morbidity, or mortality. University students are particularly susceptible to HRB due to their age, academic pressures, social environment, and newly unsupervised lifestyle. Despite major efforts by university campaigns to make students aware of the potential health risks of HRB, students continue to consistently engage in behavior that risks both their short-term and long-term health. Previous literature indicates the importance of self-esteem in positive decision-making and the inhibiting role of shame in increasing withdrawal and social isolation. Shame and guilt are distinct self-conscious emotions often evoked in similar circumstances: shame often debilitating, and guilt adaptive. The purpose of this study is to examine the associations between HRB and the affective emotions of shame and guilt and self-esteem to better understand HRB determinants. Utilizing a cross-sectional design, data werecollected from students using a Qualtrics form containing demographic and HRB questions. The Personal Feelings Questionnaire-2 (PFQ2) and the Rosenberg Self-Esteem Scale (RSES) assessed shame and guilt pronenessand global self-esteem, respectively. Mean data analyses, frequency tests, and one-way ANOVA analyses revealed associations between HRB and the three tested affective emotions. Results of this study indicated HRB is associated with higher negative emotion: higher shame and guilt proneness and lower self-esteem. With further research, this information can guide more effective clinical and educational interventions in reducing HRB and subsequent preventable diseases by targeting emotional risk factors in the university population.

Irfan, Merub

Institution: ***WI - Alverno College***

Discipline: **Sociology**

Author/Contributors:
Merub Irfan,
Kristina Kaljo,
Abbey Kruper

Abstract Name: **Rise and Shine': Professional Trajectories of Women Cancer Scientists: ?A Qualitative Study of Career Narratives**

In recent years, women consistently outnumber men in medical school enrollment, with women making up 52% of enrollment in 2021 (AAMC, 2021). Yet women are not equally distributed across medical specialties. Specifically, only 35% of the academic medicine oncology faculty are women (Chowdhary, 2020). It is well documented that a diverse workforce has many important benefits including the potential to improve health and healthcare disparities along with enhancing education for future professionals. The purpose of this research was to determine what experiences have benefited and prevented women from advancing into cancer careers. We conducted qualitative interviews of seven women from diverse backgrounds and experiences who had a professional role in the field of oncology. Interviews were recorded and transcribed verbatim. The research team reviewed the transcriptions and independently coded for patterns, comparing perspectives and experiences across the participant narratives. To ensure coding fidelity, the team met weekly, reviewing the codes and clarifying disagreements. These career narratives included a resounding awareness in having good mentors in tandem with other structured, social, and academic support systems. Networking, communication skills, and level of confidence emerge as essential skills and beliefs. The research revealed that the current challenges in oncology are limited access to resources and time to fulfill research responsibilities. Addressing barriers to the academic advancement of women in cancer careers may facilitate equity and improve collaborative research efforts, given the value that diversity brings to team endeavors.

Irfan, Michal

Institution: ***WI - Alverno College***

Discipline: **Biology**

Author/Contributors:
Michal Irfan,
David Hershey,
Chandler Hellenbrand

Abstract Name: **Identification of bacterial genes involved in polysaccharide biosynthesis**

The surfaces of all bacterial cells have specialized polysaccharides that display incredibly diverse material properties due to their complex chemical structures. Each strain secretes its own unique polysaccharides built by distinct biosynthetic pathways.The short-term goal is to extract the polysaccharide to study the sugar composition, identify each glycosyltransferase and its sugar substrate, and understand the pathway of the polysaccharide production of Rheinheimera. Once these complicated polysaccharides are fully understood, the long-term goal is to form customized polysaccharides-based material that could be used to seal open wounds or burns, and waterproof adhesives. Colonies from bacterium Rheinheimera sp. B1H13, isolated from Lake Mendota in Madison, Wisconsin, appear mucoid on agar plates leading us to hypothesize that the bacterium produces novel polysaccharides. In this current project, transposon mutagenesis was used to identify the genes involved in polysaccharide production. Colonies that appeared non- mucoid and matte-looking suggested that genes involved in polysaccharide production were disrupted. Non-mucoid mutants were selected for further studies. A mapping method was used to identify transposon insertion sites in the disrupted genes. The results indicated 11 transposon insertions in the sensor histidine kinase, one insertion was found in the UTP-glucose- 1-phosphate uridylyltransferase, and one was found in the wzy gene. wzy-pathway is the most common pathway and produces the most complex products.We predict that Rheinheimera uses a wzy-pathway for polysaccharide production

Iro, Abdullahi

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Abdullahi Iro *Anne Osano*

Abstract Name: **Effect of Seed Priming and Fortification for Baby Food Formulation in Finger Millet (Eleusine coracana L.) Germplasm in Kenya**

Food insecurity affects 2.3 billion people globally, impacting 3.1 million Kenyan children under five. Finger millet, (Eleusine coracana L.) can fill nutritional gaps and generates income. It is high in calcium (0.38%), fiber (18%), and phenolic compounds (0.3–3%), with anti-diabetic, anti-tumorigenic, atherosclerogenic, antioxidant, and antimicrobial properties. It is also drought-tolerant with few post-harvest pests. However, as a neglected and underutilized crop (NUS), it ranks sixth behind wheat, maize, and rice, with little or no agricultural innovation worldwide. The three research objectives were determining seed priming's effect on germination, nitrogen fertilizer's effect on plant development, and biofortifying protein in traditional baby food. All three studies used U-15, Early Duration, and Snapping Green genotypes at Egerton University in Njoro, Kenya. Study 1 analyzed germination rates using gibberellic acid (GA), 6-benzylaminopurine (BAP), and indole-3-acetic acid (IAA). In study 2, genotypes were grown in PVC tubes with varying nitrogen fertilizer concentrations before harvest and chlorophyll and root structure analysis. Study 3 measured the nutritional composition of baby food containing malted and unmalted pigeon pea (Cajanus cajan) and peanut bases (Arachis hypogaea). Tests for phosphorous, zinc, calcium, magnesium, iron, and protein were done. Gibberellic acid had the highest rate of germination (90+%). Malting increased calcium and magnesium availability, but no statistically significant increase in protein was observed. Fertilizer study results are pending. In the future, metabolic profiling via HPTLC and HPLC and expanding baby formula protein sources will be done to increase finger millet's nutritional foundation and combat food insecurity in Kenya and worldwide. The research was completed over the summer of 2022 at Egerton University in Njoro, Kenya under the supervision of Primary Investigator Dr. Anne Osano of Bowie State University and Dr. Paul Kimurto of Egerton University, with assistance from graduate student Anne Amayu of Egerton.

Irvin, Jake

Institution: *GA - Kennesaw State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jake Irvin *Jacob DiLeonardi* *Duy Pham,*
Mason Cox *Sonnett Kowalski* *Ben McKinney,*
Beth Woldesus *Quang Lam* *Ashish Aphale*

Abstract Name: **Energy Storage Systems Using 2D Carbon Based Nanocomposites as Electrodes**

Different allotropes of carbon, such as graphene and carbon nanotubes, have the potential for use in applications such as clean energy storage systems, aerospace, and energy conversion. In this work, the development of graphene-based nanocomposites (GNCs) for use in an ultracapacitor is investigated. GNCs can be used in ultracapacitors because of their superior electrochemical properties providing superior energy storage performance. Device miniaturization is also possible to facilitate a vast number of applications. In this experimental work, GNCs will be synthesized using an electrochemical deposition technique and the performance of the electrode will be evaluated using various electrochemical studies in the presence of an aqueous electrolyte. Distinct Faradaic and non-Faradaic charge transfer mechanisms will be investigated using cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS), and galvanostatic charge-discharge (GCD) studies. Results of different rates of deposition during synthesis and their effect on performance will be presented. The role of different substrates, electrolytes, and their effect on the performance of the device will be discussed. Mechanisms of charge storage and transfer between the electrolyte and GNC surface will be presented.

Isaacson, Kaelyn

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Lesley Mayne *Karsten Powell* *Chloe Cordell*
Kaelyn Isaacson

Abstract Name: Communication Ability Profile for Employees and Employers

The purpose of this study is to analyze the development of the Communication Ability Profile for Employees and Employers (CAPE) as a tool that may help potential employees with a disability detail how they communicate and advocate for the ways employers and co-workers should communicate with them in the workplace. The CAPE details an overview of the employee's communication strengths, workplace qualities, communication modalities, accommodations, and beneficial ways to connect with fellow employees. According to the U.S. Bureau of Labor Statistics (2020) in 2019, 19.3% of persons with disability were employed compared to 66.3 percent of people without a disability. While the labor market has improved, the degrees of improvement are lower for people with disabilities compared to people without disabilities. Furthermore, McNaughton and Arnold (2010) completed a metanalysis and found that the keys to success in employing people with disabilities include developing employee knowledge and skills that are valued in the workplace, matching the skills and interests of the individuals who use AAC, and continue to maintain and ensure needs are met for each employee to be successful. Participants for this IRB-approved study were recruited through an emailed script, the CAPE protocol, and a Qualtrics survey link sent to 16 potential participants of which nine subjects consented and completed the survey. An analysis of the data from the study of the CAPE will inform a final version of the protocol. This data will allow us to accurately reflect on the best ways to inform the protocol to foster successful communication in the workplace for people with disabilities. Furthermore, through analyzing and shaping the CAPE we hope to answer how the CAPE identifies communication strengths and needs compared to a traditional employment application form and how participants' perspectives of benefits and recommendations vary across parent and professional disciplines.

Isella, Emma

Institution: *CA - California Institute of Technology*

Discipline: Biology

Author/Contributors:
Emma Isella,
Rebecca Wipfler,
Victoria Orphan

Abstract Name: Temporal Analysis of Deep Sea Vent Microbial Communities

Deep-sea vents are one of the most biologically intriguing sites on Earth, as their microbial communities represent a plethora of novel species that continue to shape our understanding of anaerobic metabolic processes, global chemical cycling, and the origin and evolution of life on Earth. However, because they are so difficult to reach, exactly how these dynamic locations and their associated microbiota change over time is unknown. This project aims to characterize the change in environmental conditions through time and how this affects the microbial community in the sediment of the Pescadero Basin hydrothermal vent site in the Gulf of Mexico. Here we show – through the analysis of geochemistry, temperature data, and 16S DNA sequencing data from samples collected in situ across three years – that vent regions are not temporally stable systems. There were changes in the hydrothermal activity and geochemistry of the site between 2018 and 2021 that led to changes in the abundance of species, particularly in families of ANME (anaerobic methanotrophs). We also incubated sediments from both a hydrothermally active site, measured to be 80°C, and a colder background site, measured to be 4°C, at various temperature conditions to attempt to mimic this microbial community shift in vitro. Changes in the geochemical composition of the incubations were visible within as little as two weeks. As one of the first temporal studies of vent site sediment microbes, this project will contribute to developing a general understanding and prediction of vent community stability in the face of environmental change.

Ismail, Siham

Institution: *CA - San Diego State University*

Discipline: Nursing/Health Science

Author/Contributors:
Jonathan Weitz,
Tatiana Hurtado de Mendoza,
Herve Tiriac,
Joel Baumgartner,
Kaitlyn Kelly,
Jula Veerapong,
Andrew Lowy

Abstract Name: **Functional characterization of a novel platform to study organotypic tissue slices from human appendiceal cancer**

Appendiceal cancer is a rare malignancy that has an incidence rate of one in one million people per year. This disease remains challenging to study given its low incidence, frequent mucinous histology and the absence of a comparable organ in mice for disease modeling. Recent studies have shown that appendiceal cancer is genetically distinct from colorectal cancer and as a result there is a need to develop novel tumor models to study this disease. Our objective here was to characterize how long, and at what time points appendiceal tissue slices are most suitable for use. To determine if the tumor slice cytoarchitecture changed during slice culture we photographed slices at days 0, 1, 4, and 7. We determined that tissue surface area decreased by 40% over 7 days. We also assessed cell viability over a 7-day period among different donor tumor slices through live cell imaging. We found that day one had the largest percentage of viable cells, with an average of 80% across all donors. The maximum proliferation rate was found to be 15% at days 4-5. Our findings indicate that tissue slices are functional for one week in culture. This study demonstrates a novel approach to study appendiceal cancer in a pre-clinical setting.

Isom, Preston

Institution: *PA - Susquehanna University*

Discipline: History

Author/Contributors:
Preston Isom

Abstract Name: **The Bonus Expeditionary Force: US Military Veterans March on Washington**

Suffering in the Great Depression, veteran Walter W. Waters organized a 15,000-member nationwide march entitled the Bonus Expeditionary Force (BEF) to lobby the Hoover administration for the payout of the 1924 Adjusted Compensation Act on March 15, 1932. The march ended with a violent crackdown by the Hoover Administration enacted by the US Army and FBI. Soon after, Mr. Waters organized a fascist group named the Khaki Shirts to take the government back away from his definition of special interests. How did an egalitarian and service-oriented group become a fascist organization in three months? The BEF failed to progress as a social movement as march leadership lost track of their original objectives, falling prey to internal and external tensions that embracing fascist policies only hastened. Social movement theory is the best framework to analyze the movement's progression and destruction.Movements progress based on their ability to counter internal tension and outside influence while maintaining mainstream appeal. Using over 30 primary source documents taken from newspapers, government officials and march leaders, my work will analyze the devolution of the Bonus Army from a service-oriented protest organization to a violent fascist group. Historians have extensively researched the history of the BEF up to its shutdown by the US Army. Understanding how the BEF leadership grew to embrace tenants of fascism and failed to grow as a social movement is an understudied aspect of the Bonus Army and deserves more focus in the historical field.

Itellari, Ambrozia

Institution: *IL - Elmhurst University*

Discipline: Nursing/Health Science

Author/Contributors:
Ambrozia Itellari,
Stacey Raimondi

Abstract Name: **IL-4 and IL-33 Gene Expression Correlates with Colon Cancer Tumor Growth**

Colon cancer is the third-most diagnosed cancer in the United States. Additionally, 100,000 colon cancer patients are newly diagnosed each year. The possibility of developing colon cancer is reliant on genetic factors, environmental factors, and the body's immune capabilities. Having a healthy gut microbiome is relevant in homeostasis and maintaining a strong immune system. When there are gut microbial imbalances, it leaves room for the initiation of chronic diseases such as cancer. Particularly, when there is an abundance of probiotic bacteria in the body system, they are capable of increasing production of anti-inflammatory cytokines which are relevant to the fight against cancer cells because they hinder carcinogenesis and can lead to elimination of early-stage cancer cells. This research compares the interactions of pro-inflammatory cytokine receptor genes on gastrointestinal cancers, specifically colon cancer. To conduct this research, the NCI Genomic Data Commons website was used to gather and identify national data on colon cancer patient cases;including their demographic information, the severity/stage of the cancer, the procedures/treatments conducted on patients, and the gene expression of IL-4 and IL-33. IL-4 and IL-33 are cytokine receptors, known for their role in cancer cell growth and progression of the cancer cell cycle. The work presented here compares and analyzes the expression of the IL-4 and IL-33 genes in tumor versus normal samples (of which was shown to be statistically significant), gender, tumor stage, age, and history of polyps. We hypothesize that when cytokine receptor gene IL-4 and IL-33 are low, normal tissues and less tumor growth will be prevalent and when IL-4 and IL-33 are highly expressed, colon cancer tumor growth will be enhanced.

Jackson, Ruby

Institution: *MT - Montana State University - Bozeman*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ruby Jackson,
Matthew McGlennen,
Markus Dieser,
Christine Foreman,
Stephan Warnat

Abstract Name: **Impedance Spectroscopy Sensors to Detect Biofilm in Maple Sap**

Biofilm, an assemblage of surface-associated microbial cells enclosed in an extracellular polymeric matrix (EPS), are known to have pervasive effects in the food processing industry. Specifically, unwanted biofilm growth occurring in maple sap lines reduces the economic syrup value. One technique to monitor biofilm growth in real time is with the use of microfabricated electrochemical impedance spectroscopy (EIS) sensors. EIS is a method which involves applyingsinusoidal perturbations over a range of frequencies across an interface and the responses are recorded. We integrated these sensors into sap lines to continuously measure biofilm growth, temperature, and microbial-specific concentrations, allowing producers to accurately track sap quality in real-time and make decisions on sanitation practices to improve maple syrup quality and economic value. Experiments were performed both abiotically and biotically over a 72-hour time frame in a laboratory-controlled environment, where elemental conditions were closely regulated. In order to observe the effect of humidity and temperature on the sensors, similar experiments were performed outdoors, in an uncontrolled environment. For biotic experiments, EIS data followed trends that suggest microbial growth and confocal microscopy confirmed a biofilm monolayer on the surface of the sensor. Our study suggests that microfabricated EIS sensors can establish a reliable in situ quality control system and effectively aid in the mitigation of biofilm growth in sap lines.

Jacobs, Ariana

Institution: *MN - Minnesota State University - Mankato*

Discipline: Psychology/Neuroscience

Author/Contributors:
Halley Weinberger,
Annie Grund,
Ariana Jacobs

Abstract Name: **Examining Resiliency and Mindfulness as Moderators of Stress in College Students**

Stress is a common experience for many individuals. From the recent COVID-19 pandemic to managing daily demands, situations that induce stress are common. Etherton et al. (2022) noted that college students, in particular, undergo an abundance of stressful experiences, such as rising tuition rates, high academic standards, money management, and concern for grades. According to Hudd et al. (2000), stress negatively impacts students, such that students under greater stress exhibited lower self-esteem, increased drinking, difficulty sleeping, lack of energy, and reductions in overall health. This can impact college students' ability to perform academically and meet various demands. As the number and intensity of stressors in college continue to increase, we chose to research the impact of stress on academic performance and well-being. Additionally, we explore how aspects of positive psychology (resilience, empathy, self-efficacy, mindfulness) may moderate stress in college students. According to Allan et al. (2014), resilience predicts academic performance, such that increased resilience is correlated with higher grades. Therefore, this study aims to investigate how resilience relates to perceived levels of stress in college students via a survey measuring behaviors related to their academic and everyday lives. We created a survey which was distributed electronically to college students, with a goal of obtaining at least 100 responses across different school levels and other demographic characteristics. We began data collection in fall semester 2022 (current N = 50) and will continue collecting data throughout winter and spring of 2023. We hypothesize that the college students who have higher levels of resilience, mindfulness, and empathy will also report lower stress and higher achievement in academics.The analysis will aid us in understanding the relationship between stress and resilience in current students at our university.

Jacobsen, Erin

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Chemistry/Materials Science

Author/Contributors:
Erin Jacobsen,
Rebecca Haley

Abstract Name: **Finding a Greener Solvent for an Undergraduate SN2 Reaction**

My research attempts to replace N,N-dimethylformamide (DMF) with a solvent that is less toxic in a bimolecular nucleophilic substitution (SN2) reaction. SN2 reactions are done in organic chemistry laboratory courses at the University of Wisconsin-River Falls. A specific substitution reaction done on the UWRF campus yields hexyl acetate from 1-bromohexane and potassium acetate. I have experimented with two safer solvents: dimethyl carbonate (DMC) and N-butylpyrrolidinone (NBP). Using infrared spectroscopy and proton nuclear magnetic resonance spectroscopy, I can determine if dimethyl carbonate and N-butylpyrrolidinone are possible replacements for N,N-dimethylformamide because the spectra generated can show the specific stretches or peaks for the desired product, hexyl acetate. DMC did not yield enough product to be used in place of DMF, but NBP has resulted in the formation of hexyl acetate. However, the method used to reflux the reaction is difficult to do with NBP because the boiling point is higher than the boiling point of the starting material. The reaction burns because the reagents cannot be refluxed at the high boiling point of NBP. Instead of using a reflux apparatus as outlined in the laboratory manual for the Organic Chemistry I laboratory course at UWRF, I have experimented with using a water bath to heat the reaction with NBP as the solvent. In a water bath, the reaction does not reach a vigorous boil because the water bath is heated below 100°C. Using NBP as the solvent and utilizing a water bath has shown promise in the synthesis of hexyl acetate by a bimolecular nucleophilic substitution mechanism.

Jacobson, Josie

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Melissa Knopps,
Josie Jacobson,
Agnes Buttke,
Gabi Bowe-Hanson,
Gracie Hering

Abstract Name: Expressions of Cultural Identities

How might expressions of cultural identities take shape through language, stories, and other learning experiences in an elementary classroom? If preservice educators listen intentionally to the expressions of elementary students, will those studentsshare about their diverse backgrounds and cultural identities? Can these conversations support the classroom in an effort to be more culturally responsive? We will partner with a local elementary school and spendtime on site conferring withstudents about theirperceptions and contributions, connecting students' cultural knowledge to themselves and others through multimodal learning experiences, and gatherdata that will influencefuture teaching practices. Multimodal instruction is instruction that uses social and cultural resources such as drawings, technology resources, picture books, and storytelling. Student voice is listening attentively to students' perceptions and contributions.Cultural identity is the perception of self and others, and how children see themselves as a member of a group.

Jacque, Taylor

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: English/Linguistics

Author/Contributors:
Taylor Jacque

Abstract Name: Art as Transfiguration and the Philosophy of Limit in Albert Camus, La Peste: What matters is to know how to see

Albert Camus' La Peste (1947), is a novel about the French-Algerian town of Oran devastated by the bubonic plague in 194-. As a novel about an epidemic, there was a resurgence in interest in La Peste during the Covid-19 pandemic. While, La Peste, can be seen as straightforward reading about the bubonic plague, Camus encouraged a reading on multiple levels.Traditionally, scholarship has coalesced around two additional levels of interpretation, namely, an allegory for French occupation by the Nazi's during WWII and a metaphysical allegory on the nature of evil. Subsequently, historic scholarship has criticized La Peste for its messyand disjointedinterpretations or abandoned entirely an attempt at formulating a unity between interpretations; while current scholarship has dismissed or misappropriated its relevance to Covid-19. Conversely, this article argues for a unification of interpretations. To do so, this article first constructs a framework around two interrelated lines of thought. First, the absurd, the duplicity of abstraction, and the human plague of nihilism. Second, the role of the artist and the privileging of art as an antidote for nihilism through transfiguration and imaginative unity. Through this framework, a close reading of the characters reveals a unifying theme exemplified in Camus' philosophy of limit. Furthermore, Camus separates himself from the Existential thought of histimeby providing a bridge beyond its limitations. The Existentialfocus on the individual evolves in La Pest'sc ontextualization of individual freedom within our relations to others cementing the role of honest communication in achieving human solidarity.In conclusion, La Peste demonstrates a prophetic delineation of the existential state of the human condition and offers a way of seeing its transfiguration which transcends its historical time and strict academic interpretation. Furthermore, it exemplifies a significant relevance to the non-academic reader in evaluating our post-Covid-19 world.

Jagdeesh, Arjun

Institution: ***VA - Virginia Commonwealth University***

Discipline: Biology

Author/Contributors:
Arjun Jagdeesh

Abstract Name: Proposing an RNA Interference (RNAi)-based Treatment for Human Immunodeficiency Virus (HIV) by Analyzing the Post-Transcriptional Gene Targeting of SARS-CoV-2, Hepatitis C Virus, and A549 Lung Cancer Cells

Human Immunodeficiency Virus (HIV) is a retrovirus that infects CD4+ T cell lymphocytes in humans, leading to development of AIDS. While current treatment methods, including antiretroviral combination treatments, effectively limit HIV replication, HIV can evade these treatments due to its high mutation rate. Long-term antiretroviral treatment can be toxic to patients, meaning a new mechanism of HIV treatment would benefit HIV patients. RNA interference (RNAi) is an antiviral pathway found in mammals, plants, and insects that involves a small-interfering RNA that binds to viral mRNAs and cleaves them using the RNA-induced Silencing Complex (RISC), reducing viral gene expression. RNAi is a promising method of treating HIV/AIDS, since it has been found to adapt to changing viral sequences in insects and can target highly-conserved sequences. RNAi has been successfully used to inhibit replication of Hepatitis C Virus, A549 lung cancer, and SARS-CoV-2 in mammalian cells using variations of RNAi. RNAi treatments have also been approved for use in humans, including Patisiran, a treatment for polyneuropathy, setting a precedent for the possibility of a HIV RNAi treatment for humans. However, an RNAi treatment for HIV has not yet been designed or developed. This paper aims to consolidate research on RNAi mechanism of viral inhibition, possible HIV target sequences, delivery mechanisms for RNAi treatment, and counters for HIV RNAi suppressors, in order to propose a comprehensive potential RNAi treatment for HIV. RNAi could effectively inhibit HIV replication by containing two siRNAs with the sequences 5'-UUAAUACUGACGCUCUCGC-3' and 5'-UGUAUUGAUAGAUAACUAU-3' that target highly-conserved sections of the p17 and Reverse Transcriptase genes, respectively, delivered within a solid lipid nanoparticle composed of equal amounts of DOTAP and DODMA cationic lipids and containing LFA-1 antibody on the surface for receptor-mediated endocytosis, and cotransported with Rev and GagPol HIV proteins to limit the anti-RNAi function of RRE and TAR.

Jain, Tisha

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Computer Science/Information Systems

Author/Contributors:
Tisha Jain,
Dr. Michalis Kallitsis

Abstract Name: ORION: OBSERVATORY FOR CYBER-RISK INSIGHTS AND OUTAGES OF NETWORKS

Cyber-attacks present some of the most severe security threats to a nation's critical infrastructure. Early detection of these cyber threats can provide network security analysts valuable insights into ongoing malicious activities so that they can effectively mitigate them. One source of such threat intelligence is data provided via Network Telescopes or "Darknets" designed to collect unsolicited traffic towards large unused Internet IP spaces. Darknet data can help researchers obtain a global perspective on Internet behaviour and the origins of cyber attacks (e.g., malware, viruses, network scanning, and internet outages). However, analysis of data from such a large data source makes the transformation of captured information into meaningful insights challenging. To address this challenge, researchers at Merit Network, and at theUniversity of Michiganhave developed the ORION Network Telescope. The ORION infrastructure organizes the collected Darknet data and uploads meaningful events (such as detected scans and "backscatter" activities) into Google's BigQuery data warehouse. This allows researchers to easily query the data and compile features about the activities of Darknet scanners that could be then used to construct Machine Learning and AI models to categorize the data into meaningful clusters based on the attack origin, the magnitude of the problem, and attack tactics. The end goal of this project is to apply the ORION infrastructure on an ongoing, real-time basis to help detect real-world, high-impact cybersecurity incidents such as the onset of several anomalous, not-previously-seen, cluster formations.

Jakubowski, Kate

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: History

Author/Contributors:
Kate Jakubowski

Abstract Name: Genius is in the Eye of the Beholder

Do women have to be naked to get into the Met. Museum? A poster by the anonymous activist group Guerilla Girls truly bares all. According to a study done by the feminist activist group that aims to create awareness about the gender gap in the art world, 76% of the nudes featured in the museum are female—yet only 4% of the artists in the Modern Art section are women. We might not give much thought to who the artist is behind the brush, but it's about time we do. When we think of artistic masterminds, the names Leonardo da Vinci, Claude Monet, and Pablo Picasso often come to mind, and rightly so. They undeniably revolutionized each of their respective styles of art, but we often fail to recognize the impact women have had on the artistic world too: Lavinia Fontana was the first woman to have a career as an artist during the Renaissance; Hilma af Klint created some of the first abstract artworks ever documented; and Edmonia Lewis produced sculptures of US Presidents Abraham Lincoln and Ulysses S. Grant. The failure to understand their importance is a failure to understand the true meaning behind the art. They say that beauty is in the eye of the beholder, and the same thing is true for genius: society determines who exactly is one. Historically, it's mostly men whose genius gets cultivated and recognized. But in order to understand the true picture of society and the true potential our diverse world holds, we must recognize women's importance in every field—and this is especially true for art. We need to change our perception of genius in order to understand the important contributions women have made to the world of art.

Jama, Mariam

Institution: ***EGY - The American University in Cairo***

Discipline: Environmental Studies

Author/Contributors:
Mariam Jama,
Aya Emadeldeen,
Nadine Wael

Abstract Name: Socioeconomic Vulnerability and Environmental Inequalities: a Case Study of Climate Change Impacts in Egypt's Delta Agricultural Sector

Egypt's Nile Delta has historically had a significant impact and drawn a sizable population because of its abundant resources and trading opportunities. The Nile Delta faces a significant risk of being severely damaged due to flooding brought on by extreme climate change. Temperature increases, unpredictable rainfall patterns, and increasing sea levels are some of the effects of climate change on these cities. When we start to look deeper at the impacts of climate change on different groups of people, a question begins to pose itself. How are the effects of climate change distributed, and is it proportional to the level of contribution to emissions? The objectives of this research are to identify the detrimental effects and threats of climate change on farmers in Egypt's delta agricultural sector and the vulnerability of farmers. A hybrid methodology and system mapping were used to accomplish these objectives. Farmers and other internal and external stakeholders, including professionals, government officials, and NGO representatives, were also interviewed. The results of this study show and prove that farmers in Egypt's delta region are highly vulnerable due to ineffective practices and weak and inadequate government communication. The study also demonstrates that households with lower incomes and less access to natural resources are more vulnerable to the risk of flooding and sea level rise. Income disparities and asset distribution at the community level tend to be greater at higher risk exposure levels, suggesting that households with higher individual vulnerability also have higher collective vulnerability.

James, Alec

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alec James

Abstract Name: **Stop the Swimmers! Inhibiting Flagellar EF-Hand Calcium Binding Domain Containing Protein 9**

Sperm cells are a vital component of fertilization and maintain a complicated and multiplex anatomy that enables motility, survival, and protection for important genetic information. Following an extensive literature review, we identified a testis-specific protein that is advantageous for inhibition to produce reversible sterility in males without detrimentally impacting non-target tissues and cells. This protein, EF-hand CAlcium Binding Domain Containing Protein 9 (EFCAB9), is a major constituent of the flagellum in sperm cells. EFCAB9 is necessary for sperm cell mobility, motility, and controls the influx of calcium into the sperm flagellum to allow for hyperactivation and penetration of the ovum. EFCAB9 is an ideal target for reversible inhibition to cause temporary male sterility, because the protein expression pattern is localized in the testis and is vital for the systematic and intricate motion and hyperactivation of sperm cells. Molecular modeling and virtual docking software facilitates the structure-function-based drug design process to create small molecule inhibitors of the EFCAB9 protein. Additionally, miRNA silencing of the EFCAB9 mRNA strand prior to protein synthesis is explored as another method of inhibition. This work could lead to decreased sperm motility and male infertility that can be easily reversed. Ultimately, the development of male birth control will expand upon the currently-available options of condoms and vasectomies, and enhance individual sexual health and autonomy.

James, Christina

Institution: *GA - University of Georgia*

Discipline: Biology

Author/Contributors:
Christina James

Abstract Name: **Next Generation Organoids: Root Vascularization and Accurate Organ Shape**

Organoids are 3D, miniature cultures made from stem cells or primary tissue that mimic the function of nativeorgans, making them a useful platform to study the organ pathology of a disease or determine how drugs can impact a whole organ system.Organoids have the advantages of more accurately recapitulating cell to cell and cell to matrixinteractions compared to 2D cell cultures. One issue in organoid culture is the development of a necrotic core because the diffusion of nutrients and oxygen through passive diffusion is limited to the periphery of the organoid. Most organoids lack vascularization, which in vivo is essential to supply nutrients, oxygen, and remove waste deep in the organ. Additionally, organoids are usually shaped into a spheroid. However, in vivo, there is an immense variety in organ shapes across the animal kingdom. In the human body, there is evidence that organ shape dictates function. We aim to improve organoid function in three aims. First, I will learn the techniques to make several organoids and spheroids. Second, I will investigate the shape and dimensions of the human adrenal gland to bio-print 3D scaffolds in the ideal adrenal gland shape and seed them with human stem cell-derived cells. The goal will be to compare such engineered organoids to the original organoids to determine if there is improved function. Third, to address the organoids' necrotic core, I will use an interdisciplinary approach to combine plant biology and stem cell cultures. I will use Arabidopsis roots as vasculature scaffolds that will be surrounded by the stem-cell derived cells to form organoids with improved nutrient/oxygen transportation. My ultimate goal is to optimize organoid function through accurate native shape and root-based vascularization.

Jamieson, Bray

Institution: *CAN - University of Calgary*

Discipline: **Communication/Journalism**

Author/Contributors:
Bray Jamieson

Abstract Name: **Can the Line Cook Speak: A critical discourse analysis of the voice and representation of Canadian restaurant staff.**

Over the course of the Covid-19 pandemic, restauranteurs and wage-earning restaurant staff found themselves positions as the focus of an immense amount of mainstream media attention. Never has the restaurant industry been the recipient of such frequent and consistent coverage, yet scholars have yet to critically engage with the available media discourse. This research explores the mainstream media depiction of the restaurant industry and challenges journalistic practices which prioritize the voices and ideological perspectives of those atop the restaurant industry hierarchy. To demonstrate this phenomenon, I engaged in a critical discourse analysis of 55 published online news articles through the theoretical lens proposed by Gayatri Spivak. The sample was examined to demonstrate who was afforded the discursive space to utilize their voice and share their ideological disposition as well as the ways in which the discursive voice found within the sample shaped a representation of wage-earning restaurant staff. The primary findings of this paper reveal that wage-earning restaurant staff, within the selected sample, were discursively silenced and not provided with an adequate opportunity to share their experience of working in a customer-facing position throughout the Covid-19 pandemic. Wage-earning restaurant staff were rarely afforded the opportunity to speak, however, they were spoken for. I argue throughout this paper that the voice of wage-earning restaurant staff is crafted by those atop the restaurant industry hierarchy and that this phenomenon serves to validate traditional restaurant industry hierarchical structures and reinforce hegemonic ideological perspectives. This study emphasizes the need for journalists to embrace the theoretical disposition of a standpoint theorist and strive to ensure that members of subordinated populations are not subject to the imposition of an inauthentic voice.

Jamil, Zahra

Institution: *NY - Brooklyn College*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Zahra Jamil

Abstract Name: **The impact of Nop1 on the presence of aggregation and growth rescue of FUS yeast**

Amyotrophic lateral sclerosis (ALS) is a progressive, fatal neurological disease that is characterized by a loss of motor neurons in the brain and the spinal cord which lead to muscle atrophy and paralysis. ALS has been linked to various gene mutations. A notable gene mutation occurs in fused in sarcoma (FUS), leading to mislocalization of FUS protein in the cytoplasm resulting in protein aggregation and neuronal death.How protein aggregation leads to neuronal death has not been completely elucidated. Epigenetic mechanisms such as histone post-translational modifications might be involved in this connection. We have previously discovered that FUS yeast display decreases in acetylation levels on Lysine 9 (H3K9ac) and Lysine 14 (H3K14ac) on Histone H3. Furthermore, treatment with histone deacetylase inhibitors restored H3K9ac and H3K14ac levels and improved cell growth even in the presence of FUS aggregation. We also found FUS does not directly interact with histones or histone deacetylases. Instead, we find that FUS interacts with Nop1, a histone glutamine methyltransferase, which might mediate indirect interactions with other histone modifiers.Here, we explore the role of Nop1 in FUS aggregation impact on cell survival and the epigenome. We hypothesize that Nop1 knockdown will lead to improved cell growth even in the presence of FUS aggregation by interfering with mechanisms leading to changes in histone modifications . Our findings will showcase the potential for modulation of histone post-translational modifications in neurodegenerative disease treatment.

Jancich, Max

Institution: *IN - Indiana University Bloomington*

Discipline: Psychology/Neuroscience

Author/Contributors:
Max Jancich,
Subha Kumpaty,
Todd Parrish

Abstract Name: **Creation of Fiber-Based Brain Phantom for Diffusion Tensor MRI**

Diffusion Tensor Imaging (DTI) is a powerful tool at the disposal of medical professionals since it allows them to observe the fibrous connections within brain white matter. However, DTI is much more sensitive than traditional MRI techniques and requires better means of calibration. Current phantoms available to medical professionals are simplified and far from accurately representing the brain. The goal of this research was to improve upon previous studies done on creating brain phantoms for DTI using Dyneema® fibers. Bundles of Dyneema® serve as a substitute for brain matter because of their small fiber size and hydrophobicity. This study was done by testing different kinds of Dyneema® fibers, fiber bundle sizes, and fiber orientations in order to most accurately mimic brain white matter in MRI techniques. A key part of this research was the utilization of additive manufacturing to create phantom-scaffolds to hold bundles of Dyneema® fibers. In total, five phantoms were created using water as a surrounding and one was created with agar gel as a surrounding. It was determined that air removal, accounting for the movement of water within the MRI machine, fiber bundle wrapping, and the settings of the MRI machine were key factors to consider during the production of an effective phantom for DTI.

Jankoska, Leah

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biology

Author/Contributors:
Leah Jankoska,
Jillian Myers

Abstract Name: **How do Viruses in Extremophilic Fungi Impact Their Host?**

The study of fungi has prompted great discoveries, but there is still much to learn by studying fungal biodiversity. A specific unstudied group of fungi is extremophiles who exhibit resilience and growth in extreme environments. They also, like all organisms, host viruses that may impact them. In this project, extremophilic fungi are tested to find mycoviruses. The effects of mycoviruses on the fungi will be assessed through growth experiments in different conditions after each species is cured. The Stress-Gradient Hypothesis states that organisms will tend to cooperate rather than compete in stressful environments, so it is expected that there will be a mutualistic relationship between the fungi and their viruses. To test this hypothesis we will 1) culture pure samples of extremophiles and use them in dsRNA virus screening through RNA extraction and cellulose chromatography, and by using the products of the chromatography, viruses will beindicated by high-weight molecular bands when analyzed in gel electrophoresis, 2) the host fungi will be grown with cycloheximide and subcultured to cure the strain of any mycoviruses, 3) once the strains are cured of mycoviruses, virus-positive and virus-free strains will be cultured separately and measured for daily radial growth. The growth of virus-positive and virus-free strains will be compared. This growth assay will be repeated under various environmental conditions. Through the comparison of virus-positive and virus-free strains, we expect to find a mutualistic relationship between the extremophiles and their mycoviruses. The mycoviruses are expected to serve the fungi in extreme environments more than in stress-free environments. Furthermore, virus-free strains are expected to grow less efficiently in extreme conditions when compared to virus-positive strains. These findings can be used in further research to establish these extremophiles as biocontrol agents in a plethora of problems such as oceanic oil spills, plant species extinction, and others.

Janneh, Kaddy

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **Biology**

Author/Contributors:
Javit Thao,
Kaddy Janneh,
Kirandeep Kaur,
Isaac Kamara,
John Chan

Abstract Name: **Updated Annotation of Platyhelminth G-Protein Coupled Receptors**

Parasitic schistosome flatworms (Schistosoma haematobium, Schistosoma mansoni, and the zoonotic parasite Schistosoma japonicum) are responsible for the disease schistosomiasis which affects >200 million people. There is a need to identify new druggable targets in these parasites, given that there is no human vaccine and the current reliance on praziquantel monotherapy raises the potential for the emergence of drug-resistance. G-protein coupled receptors (GPCRs) are a logical starting point, since they control important aspects of schistosome biology such as neuromuscular function and reproduction. These targets are also highly druggable; over 1/3rd of FDA approved therapeutics act through these receptors. Updated genomes for several important species of flatworms have recently become available, providing significant improvements over previous drafts. There are likely additional GPCRs in these improved genomes that were not annotated in previous versions. Here, we have bioinformatically predicted the GPCRs present in these updated flatworm genomes using tools such as HMMER3 and BLAST, and used tree-building approaches to classify these additional receptors. These new annotations will assist drug discovery efforts by expanding our knowledge of parasite druggable targets, as well as enable improved analysis of omics datasets to better understand the mechanisms of existing therapeutics.

Jans, Karly

Institution: *IA - Iowa State University*

Discipline: **Public Health**

Author/Contributors:
Karly Jans,
Michael Rentz

Abstract Name: **Investigating Job Satisfaction in Iowa Veterinary Clinics**

A veterinary medicine career has many stressors, including low wages, long hours, client complaints, management responsibilities, euthanasia procedures, educational debt, and poor work-life balance. With these stressors, veterinary professionals are at high risk for burnout, compassion fatigue, depression, and suicidal ideations. Our aim with this study was to investigate the prevalence of these conditions within Iowa veterinary clinics. We sent a survey to over 400 clinics to collect information using three widely used, standardized survey tools: the ProQOL 5, PHQ-9, and SBQ-R. We also included questions about demographics, job-related factors, and job satisfaction. We received and analyzed a total of 94 responses. We found no support to indicate different levels of burnout, compassion satisfaction, or secondary traumatic stress between veterinarians and support staff, but support staff was found to have increased levels of depression and suicidal ideations compared to veterinarians. Based on this data, we believe that both veterinarians and support staff have elevated levels of burnout, depression, and suicidal ideations, but support staff suffers from higher levels. Despite this, Iowa veterinary professionals remain compassionate about their work and desire to stay in the veterinary medicine field.

Janvrin, Shawn

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Blayde Lecher,
Shawn Janvrin,
Paul Schierenbeck,
Egor Morozov

Abstract Name: Political Divide

The current climate in the US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What informaiton is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingness to accept otherswith different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political group discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Jara Gonzalez, Ytzel

Institution: ***OK - University of Central Oklahoma***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Y Jara Gonzalez

Abstract Name: Analyzing Sexual Health and Consent Policies Among Greek Life Organizations

Sexual violence is an ongoing phenomenon on and off campus, especially among college-aged individuals. While some universities have implemented bystander intervention programs, I believe not many individuals are aware of these programs, especially when it comes to greek life organizations. As a current member of a multicultural greek sorority, I have seen, firsthand, the misconceptions and stigmatization of bystander intervention. Which lacks the basic concepts as well as knowledge of sexual health and consent. My plan is to analyze the varying policies major universities have on sexual health and consent, especially when it comes to greek life organizations. Additionally, I plan on hosting a roundtable discussion regarding sexual health and consent within greek life organizations, by unifying representatives from various greek life councils.

Jarvinen, Lamis

Institution: *MA - Westfield State University*

Discipline: **FAN Abstract**

Author/Contributors:
Lamis Jarvinen,
Robin White

Abstract Name: **Strategies for Increasing Student Engagement in Undergraduate Research and Creative Activity While Promoting Diversity and Inclusion**

There are many tangible and intangible benefits to student participation in undergraduate research and creative projects. Students who engage in research are transformed by the experience; in addition to exploring their field of interest, they gain confidence, learn and master transferable skills, network with others, and hone their written and oral communication. Furthermore, it is well-established that participation in undergraduate research leads to increased retention and a sense of community. At Westfield State University, a small public liberal arts institution, we recognize the importance of supporting student and faculty engagement in research and have prioritized this initiative through the formation of a Center for Research and Creative Activity (CURCA). One of the major goals of CURCA is to increase the diversity of students that participate in this high-impact practice. This includes diversity in race, ethnicity, gender, socioeconomic status, and field of study; we feel that any student in any major should have the opportunity to conduct undergraduate research. In this FAN session, we will detail approaches we have taken and will continue to take to achieve diversity and inclusive excellence and discuss challenges and obstacles faced, both from the perspective of a Director of the center and the Faculty Coordinator. Throughout the session, we will incorporate participant feedback and experience using the formative assessment tool “Plickers” cards. Furthermore, we will engage with participants in discussions related to our process of institutionalizing undergraduate research and share insights into lessons learned and future directions to take. This session aligns with “Expanding the participation of underrepresented groups in undergraduate research and creative inquiry”.

Jean-Baptiste, Kennya

Institution: *GA - Georgia State University*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Kennya Jean-Baptiste

Abstract Name: **The Fluid Nature of Piracy in the 19 Century South China Sea**

Ghulam A. Nadri The Fluid Nature of Piracy in the 19 Century South China Sea Maritime piracy is generally understood in the literature as attacking and plundering ships at sea. Eastern piracy is often overshadowed by Western Piracy. This paper seeks to examine pirate identity and argues that the fluid nature of pirate identity contributes to their efficacy. The paper also argues that the pirate identity and lifestyle challenged the social norms and legitimacy of the local government. This paper also contrasts Eastern piracy with Western piracy. It argues the Western idea of piracy is too rigid to be applied to Eastern piracy. Incidents from China and Vietnam are used to provide a thorough examination of Eastern piracy

Jefferson, Janiece

Institution: ***TX - St. Edward's University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Janiece Jefferson

Abstract Name: Measuring Grassland Ecosystem Productivity: Assessing Effects of Invasive vs Native Grass and Forb Dominance in the Texas Hill Country

Native prairies in Central Texas once harbored a vast diversity of plants and animals, but many have experienced declines due to exotic species invasion and woody encroachment. Prescribed fire and seeding treatments were used on private and public land in the Texas Hill Country to restore grassland communities. Ecosystem services and functions, such as productivity, disturbance regulation, nutrient cycling, and soil erosion control can be improved through restoration efforts, but these functional responses have not yet been quantified at many sites. We measured aboveground productivity in grassland sites dominated by the invasive grass King Ranch bluestem (Bothriochloa ischaemum) and nearby restored grassland sites dominated by little bluestem (Schizachyrium scoparium) at three sites: Commons Ford Metropark, Cemetery field at Spicewood Ranch, and West Winding field at Spicewood Ranch. We collected aboveground biomass at 4 plots per site (n=24), in three 20 X 50 cm2 quadrats per plot in spring (May-June) and fall (Oct) of 2021 and 2022, which allowed us to compare vegetation response to restoration in a wet (2021) and extremely dry (2022) year. During the wet year, restored sites were twice as productive as invasive-dominated sites, at 305 ± 161 g m2 compared to 150.55 ± 54 g m2 . We are still analyzing data from 2022. Results from the dry year will provide insight into how resilient restored sites are to extreme drought, which is predicted to occur more frequently in Central Texas due to climate change.

Jeninga, Esther

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Esther Jeninga,
Dean Wink

Abstract Name: Using Visual Graphics of Mass Wasting for Community Outreach

Port Washington, Wisconsin, is a community along the shore of Lake Michigan. Their scenic view makes it a popular destination for tourists. Their shoreline is subject to lake erosion, and increased rainfall leads to landslides within the city. However, the general public seems mostly unaware of the various factors that can cause slope failure events in their own communities. Unless bridged, this knowledge gap can lead to potential death and property damage as people may fail to take appropriate and timely slope stabilization measures to protect their communities. The United States Geological Survey has released a Landslide Handbook, however, the terminology used throughout is difficult to understand without expert commentary. Simply finding the information you are looking for becomes a game a “Where’s Waldo”. The glossary of landslide terms is found on page sixty of the handbook rather than at the beginning or the end. This makes the first fifty-nine pages incomprehensible to a general reader.To address this issue, we have designed a simple visual graphic of different types of slope failures, with explanations of causes, effects, and general descriptions of each. Community outreach is important when talking about landslides because people need to be prepared so they can be proactive in protecting their own property and the community's economy.This past summer the community experienced a slump on their North Park Beach.We shared the graphic with Port Washington city leaders and were met with a positive response. This project is part of an ongoing conversation between our team and the Port Washington community. The purpose of creating this poster for the Port Washington community is to bridge the gap between specialists and the general public.

Jenkins, Hayley

Institution: *PA - Duquesne University*

Discipline: **Biology**

Author/Contributors:
Hayley Jenkins,
Emine Kahveci,
Michael Jensen-Seaman

Abstract Name: **Functional evolution of the KLK2 and KLK3 proteases in hominoid primates**

The kallikrein-related peptidases (KLKs) are a large family of proteins that code for proteases, many members of which are expressed in a tissue-specific manner. The KLK2 and KLK3 proteases are highly expressed in seminal plasma and are responsible for the breakdown of extracellular coagulum to mobilize sperm for subsequent fertilization. The KLK2 and KLK3 genes arose from a gene duplication approximately 40 million years ago in the ancestor of the catarrhines (apes and Old-World monkeys). In humans, these genes both show prostate-specific expression but with different substrate specificities. While most catarhines retain functional KLK2 and KLK3 genes, genomic deletions have occurred independently in both gorillas and gibbons. This has resulted in chimeric genes (KLK2/3) where the first four exons are derived from KLK3 and the last exon from KLK2. In order to determine whether the resulting chimeric proteins of gorillas and gibbons function more similarly to KLK2 or to KLK3, we cloned their coding sequences into a mammalian expression vector with a hexahistidine tag. These constructs were then transfected into HEK-293T cells, purified through affinity chromatography. Their ability to cleave two different fluorescently labeled synthetic peptide substrates were subsequently quantified. Human KLK2 and KLK3 served throughout as positive controls. The observed differences in enzyme kinetics on the different substrates will be discussed in light of the evolution of the primate KLK gene family.

Jensen, Ashley

Institution: *MN - Bemidji State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Joshua Storey,
Emma Olson,
Ashley Jensen

Abstract Name: **Biochemical Analysis of Non-Protein Coding RNA LINC00298 and Its Expression in Early Onset Alzhimers.**

Alzheimer's is a terminal-neurodegenerative disease which causes neuronal loss in the brain. This disease affects 5.6 million people a year over the age of 65 and is the most common diagnosis among Dementia patients. Data meta-analysis of Alzheimer's patients has found that specific genes, when expressed, may lead to the development of Alzheimer's. One gene of interest is LINC00298 which is a non-protein coding RNA in the brain that is present in Early-Onset Alzheimer's. Very little is known about the impact of this gene during development. Our research team's focus is to biochemically and biophysically analyze LINC00298. Working in collaboration with the School of Pharmacy at North Dakota State University, using Circular Dichroism and Cell Mobility Shifts, researchers were able to identify that the gene depends on Mg2+ using the electrostatic interactions to undergo significant structural changes upon binding. Additionally, through the use of Mass Spectrometry in coordination with the University of Minnesota Minneapolis, Center of Mass Spectrometry and Proteomics. The LINC00298 gene was biotinylated at the 3' end and bound to streptavidin beads. This testing allowed for an understanding in its interactions with enzyme metabolism as well as protein translation. This new information gives insight on the importance of the gene and will potentially assist in finding solutions for Alzheimer's in the future.

Jensen, Dylan

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
McKinley Davis *Dylan Jensen* *Emma Augustine, Daniel Ehlinger*

Abstract Name: **Adolescent social isolation stress enhances nicotine conditioned place preference and disrupts stress coping behavior.**

Adolescence is a sensitive period in brain development that is marked by increased susceptibility to the effects of chronic stress, which may enhance vulnerability to neuropsychiatric conditions such as depression and substance use disorders. In the present study, we used an animal model to examine the effect of adolescent social isolation stress on coping behavior and nicotine reward. During the adolescent period from postnatal day (P)35-P49, male and female C57BL/6J mice were exposed to either social isolation (SI) stress or standard rearing (SR) conditions, as well as nicotine exposure (0.35mg/kg) four times between P35-P49 during a nicotine conditioned place preference (CPP) procedure. On approximately P50, stress-coping behavior was examined following a 6-minute forced-swim test (FST). Our behavioral results show that both male and female SI mice more rapidly develop nicotine CPP compared to SR mice, that SI mice exhibit increased levels of immobility in the FST, and that prior nicotine exposure during social isolation decreases immobility in the FST. These results suggest that adolescent social isolation stress enhances the rewarding effects of nicotine and negatively impacts stress-coping behavior. To determine whether adolescence is a sensitive period for these effects, ongoing research efforts are aimed at comparing these results to adult social isolation and nicotine exposure. Furthermore, we are examining stress-induced functional (c-fos expression) differences in the brains of SI versus SR mice in response to the FST via immunohistochemistry of the dorsal raphe ascending serotonergic system. Collectively, these analyses will help determine neurological correlates of adolescent susceptibility to the negative effects of chronic social isolation stress and inform our understanding of adolescent brain development and vulnerability.

Jentzsch, Jennifer

Institution: *UT - Utah Valley University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Jennifer Jentzsch

Abstract Name: **High wind impacts on the Wasatch Front - Saratoga Springs Utah**

The Wasatch Front Range has experienced major windstorms causing Utah citizens to be concerned about how future events could affect them. In our research project, we concentrated on the city of Saratoga Springs, Utah. The methods we used for gauging wind event impact involved researching statewide weather information utilizing local news and historical weather information with a focus on Saratoga Springs. Our goal was to develop information on what the public could do to prepare for a wind event and what to do during the event. We then compiled an informational document that could be potentially used on a web-based platform. After additional research and recommendations from future cohorts of students with a focus on other cities along the Wasatch front. These findings could then be consolidated and offered for use to different emergency sites, which currently have no materials that are specific to wind events such as BeReady Utah. (https://beready.utah.gov/)

Jett, Stephanie

Institution: *GA - Georgia College and State University*

Discipline: **FAN Abstract**

Author/Contributors:
Stephanie Jett *Laurie Peebles*

Abstract Name: **Using Community-Based Participatory Action Research Frameworks to Enhance Undergraduate Research and Connect Students to Historically Excluded and Exploited Communities**

Community-based participatory action research models (CbPAR) are unique research frameworks that involve the community of interest (CoI) in the research process. The aim is to address concerns of interest and value to the CoI, which increases investment in the research by the CoI. CbPAR should always be founded in the needs of the CoI, informed by community knowledge, and aimed to lead to community and social changes. Unlike traditional research models, CbPAR focuses on empowering the CoI, amplifying their voices, and sharing their unique stories. These aims are especially important for historically excluded and exploited communities (e.g., the LGBTQIA+ community and Veterans) in research. Within these communities, there is a high degree of distrust and disenfranchisement towards the scientific community due to historical and current exploitation. CbPAR methods are a first step towards mending relationships with these communities. It also connects undergraduate students to these communities in a meaningful way. Students learn to empathetically listen and connect to the stories of the community, becoming more than consumers of knowledge, but rather stewards of that knowledge to promote mutually beneficial change in their communities. Additionally, these qualitative, CbPAR research frameworks provide students with hands-on learning opportunities with interview techniques, transcription, and analyses. CbPAR allows students the unique experience of working directly with the CoI through the phases of the research. Too often, traditional service-learning opportunities in the classroom benefits the insular culture of academia more than the community itself. Through CbPAR, students learn how to connect with the community from a scholar-activist perspective, which emboldens them to to affect social and political change in their communities. We argue that CbPAR methods are mutually beneficial to faculty, students, and the community and should be used more often to allow for research to be less exploitative in our drive to advance science.

Jha, Vaishali

Institution: *CA - San Jose State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Syed Kazmi *Vaishali Jha* *Siddhartha Shibi*
Syed Kazmi

Abstract Name: **Machine Learning to Develop Models for Analyzing Stress in an Academic Environment**

This paper demonstrates the significance of readily available machine learning (ML) platforms like IBM Watson machine where the user can develop ML models to analyze the data and predict the outcome with high accuracy by using various algorithms. This platform provides a great opportunity to new users with limited computing and/or data analysis experience to run a machine learning problem. This is achieved by offering the user an option of automated selection of various algorithms and other relevant parameters (hyper parameter values) under both supervised and unsupervised learning. In the current work, we are analyzing the data collected from an academic institution in Pakistan to evaluate the impact of various parameters on students' average grades by developing ML models on Watson platform. The data was collected right after the COVID peak by distributing a questionnaire among students. The aim was to obtain information on various relevant parameters that were grouped in four sections as "General Information", "Perceived Stress Scale", "Cognitive Assessment", and "Social Dependency". Watson ML platform was used to develop a model under "supervised learning" option and by incorporating various algorithms including Extra Trees Classifier and Random Forest Classifier. The machine proposed two best performing pipelines corresponding to Random Forest Classifier that gave an accuracy of 66.4% (Cross-Validation) in which feature enhancements were performed including hyper parameter Optimization and feature engineering. The paper includes details on various aspects of using ML Watson-platform and the outcome of the ML-model for the analysis of the current data. Results shows that among all impacting parameters, cognitive performance, self-study hours, and number of class absentees played a dominant role in predicting the student's average score. This presentation will describe the questionnaire, statistics, and ML models employed to conduct the study. Suggestions to improve the model's accuracy will also be discussed.

Jiang, Menglu

Institution: *UT - Weber State University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Menglu Jiang *Sara Mejia* *David Aguilar-Alvarez*

Abstract Name: **Acute Effects of Aerobic Activity Compared to Sauna Exposure on Plasma Uric Acid Concentration**

Aerobic exercise provides multiple health benefits, some of these benefits are modulated by increased body temperature, vasodilation, sweating, and others. Previous studies have shown that exercising results in plasma uric acid (UA) increased concentrations. In this study, we sought to investigate if a 30-minute session of sauna-induced heat therapy has similar effects as exercising aerobically for the same amount of time on plasma UA. We hypothesize that heat therapy and exercise will increase concentrations of plasma UA.Plasma from fourteen participants (age 23 ± 2 y, ht 1.74 ± 0.08 m, wt 80.9 ± 19.7, BMI 26.5 ± 5.5 kg/㎡) was collected and tested. Each participant completed a randomized crossover, counterbalanced control study. This trial consisted of a 20-minute resting period lying supine that was followed by 30 minutes of either sauna heat therapy (SAU: ~132°F/~56°C), cycling exercise (EXER: ~40-50% HRR), or upright sitting that served as the control (CON: control). At the completion of the trial, participants completed a 60-minute recovery period lying supine. Plasma samples were taken both pre- and post-completion of each activity for research evaluation.Cycling exercise was the only treatment to increase UA concentration, EXER (pre 3.52 ± 0.16 vs post 3.67 ± 0.15; P = 0.03), SAU (pre 3.70 ± 0.17 vs post 3.73 ± 0.15; P = 0.85), CON (pre 3.90 ± 0.18 vs post 3.74 ± 0.14; P = 0.11).Cycling for 30 minutes (40-50% HRR) was enough to increase UA levels. This is in accordance with previous studies showing that exercise increases vasopressin which concentrates plasma UA; in addition exercise results in lactic acid build up that prevents plasma UA excretion.Sauna heat therapy for 30 min at ~132°F/~56°C did not affect plasma UA levels. Longer exposure or/and intensity may be required to observe noticeable changes in this marker.

Jiao, Tan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Yinan Song *Ning Su* *Tan Jiao*

Abstract Name: **Exploring The Impact Of Educational Exchange Activities Between UWEC And CIT Project**

With the development of educational internationalization, more and more Chinese students choose to study abroad. While ample studies discuss international students, less research examines exchange programs. To better understand the impact of exchange activities on international students and scholars, this case study explored the positive experiences and challenges faced by students and exchange scholars in the University of Wisconsin Eau-Claire (UWEC) and Changshu Institute of Technology (CIT) 1+2+1 program.The research team adopted surveys and interviewers to collect data from exchange students, visiting scholars, and administrative personnel. The results revealed both external and internal factors that accounted for the participants' experience, such as students' perceptions of values in speaking up, sense of fitting in, and the importance/lack of a multilingual classroom environment. The participants shed light on gender, identity, language, culture, education, and communication style. Additionally, results showed that the study abroad experiences influenced students' networking with diverse friends and a better understanding of their own cultural values and prejudices. This project aims to offer implications for future exchange programs between Chinese and American universities, advocate for thoughtful and mutually beneficial cross-cultural communication, as well as offering suggestions for exchange students.What made this research project distinctive and meaningful was that the entire research team consisted of international students and a faculty mentor from China. Both the topic of the project and the background of the researchers represent an effort to promote equity, diversity, and inclusion locally and globally. The research team was able to bring in an authentic, culture-relative, and empathetic lens to examine the gains and challenges experienced by the participants. This project hopes to inspire more international students to engage in faculty-student research experience, enhance their professional and career skills, and amplify their voices.

Jochum, Shalyin

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Junior Tochimani,
Alyssa Bierman,
Jacob Grabinski,
Shalyin Jochum,
Aspen Mercer,
Jackson Turk

Abstract Name: Social Media and Self-esteem

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negative information that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development.The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Joergens, Caden

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Mathematics

Author/Contributors:
Caden Joergens,
Morgan Fiebig

Abstract Name: Skeletons of Algebraic Surfaces in Grasshopper

Algebraic surfaces can be difficult to understand from a 2D view, such as on a screen, and creating an accurate physical model comes with many inherent problems, specifically at points of singularity which cause the model to break easily. Past attempts to solve this problem have included global and piece-by-piece solidification. This ongoing project attempts to create printable models piece-by-piece and place a plug and socket connection at connecting singularities, allowing the model to be taken apart and snaped back together. We previously used OpenSCAD, but it was unable to perform the necessary Boolean operations, so we opted to change tools. Related work done in Summer 2022 focused on porting code to Rhino3D and Grasshopper. The current project extends upon this work and aims to compute and print the skeleton of algebraic surfaces, incorporate the plug and socket connections, and add shells, allowing for the printing of larger and more intricate models of algebraic surfaces.

John, Ashlin

Institution: *IL - Elmhurst University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ashlin John

Abstract Name: **Testosterone Increase Caused by Winning and Higher Social Standing Lead to Lower Positive Utilitarianism**

The winning effect is when an animal wins an aggressive encounter, then is more likely to engage in and win aggressive encounters in the future. This effect has been studied in humans, specifically in athletic competitions, as well as in non-human primates (Bernstein et al., 1974; Page; Coates, 2017). The increases in testosterone after winning have been linked to changes in mood, dominance behavior, perception of physical dominance, and aggressive behavior (Mazur; Lamb, 1980; Mazur; Booth, 1998; Welling et al., 2016; Carré et al., 2017). Research has found that high testosterone levels are related to more negative utilitarian decision-making, especially when this decision involves aggression and social cost (Carney; Mason, 2010). The current research is exploring “social winners”: individuals who experience the winning effect from being high status. Participants who are higher status are more likely to make aggressive utilitarian decisions and participants who are randomly assigned to win a game of Tetris will show a shift toward aggressive utilitarian decisions. Participants will be randomly assigned to win or lose a competition playing Tetris, which has been previously validated (Zilioli; Watson, 2012), and then complete the Oxford Utilitarian Scale. Inferring previous studies, participants in the winning condition will make aggressive utilitarian decisions and score negatively on the utilitarian scale. Success in males increases testosterone, which may subsequently increase how likely they are to punish others. Understanding this relationship may help illustrate why individuals in leadership roles often make harsher decisions.

Johns, Irene

Institution: *VA - Virginia Tech*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Katie Hucker,
Irene Johns

Abstract Name: **Low-cost Multispectral Camera for NIR Imaging Analysis**

Low-cost multispectral imaging is critical for applications in agriculture, infrastructure, and disaster planning by enabling detection of information beyond human vision or Red-Green-Blue (RGB) cameras. Most of these applications use an Unmanned Aerial Vehicle (UAV) as a platform to carry the sensor payload, and thus require lightweight and inexpensive imaging systems. The current study aims to develop and test a simple, low-cost, yet reliable multispectral camera payload for target detection. By extending the 400 to 700nm range of visible light, we can highlight features that are otherwise unnoticeable by the human eye or digital camera, such as soil moisture levels. Through the development of a low-cost multispectral imaging payload, we will harness near infrared wavelengths for target identification purposes. The camera is developed around a Raspberry Pi (RPi) 4B computer and four different Pi camera modules: two RPi RGB modules and two RPi NoIR V2 camera modules. A python script adapted from existing packages is used to trigger each camera synchronously, simulating flight computer-controller automated data capture. To highlight different wavelengths in the captured spectrum, the NoIR camera modules have been modified by adding either a red or blue gel filter. We will report on ground testing on targets of various sizes, materials, colors, and temperatures to determine detection accuracy. The captured images will be compared against the images taken from a commercial off-the-shelf multispectral camera.

Johnson, Alayna

Institution: *TN - Trevecca Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jose Francisco Carrascal-Saenz,
Alayna Johnson,
Juana Valentina Rodriguez Trujillo

Abstract Name: **Investigating the Relationship between Academic Stress, Trait Self-Control, and Compulsive Behaviors in College Students**

Stress amongst college students has been at an all-time high, contributing towards issues in coping, poor academic performance, and increased dropout rates. The American Psychological Association has even identified this population as vulnerable to high levels of stress. The current study aimed to explore relationships with academic stress, trait-self control, and various compulsive behaviors including disinhibited eating, cyberloafing, and compulsive online shopping. In total, 164 college students were surveyed utilizing convenience sampling to take part in this research by volunteering their time to fill out a 71-item survey. Survey packets included the Perceptions of Academic Stress Scale (PAS), the Brief Multidimensional Self-Control Scale (BMSCS), the Dutch Eating Behavioral Questionnaire (DEBQ), the Cyberloafing in Lectures Measure (CLM), and the Modified Bergen's Shopping Addiction Scale (M-BSA). In addition, several demographic questions and daily hours spent on Social media were asked. It was hypothesized that there would be negative correlations between academic stress and trait self-control. Furthermore, it was believed that there would be negative correlations between trait self-control and the various compulsive behaviors studied. Lastly, it was hypothesized that there would be positive correlations between academic stress and the compulsive behaviors studied. Results found significant moderate positive correlations between academic stress and cyberloafing and compulsive online shopping. Furthermore, a significant moderate negative correlation was found between academic stress and trait self-control. Trait self-control and the compulsive behaviors studied were unrelated. Correlations between academic stress and disinhibited eating were also not significant. Recommendations for future research, implications, and limitations are discussed.

Johnson, Isabella

Institution: *MI - Oakland University*

Discipline: Nursing/Health Science

Author/Contributors:
Isabella Johnson

Abstract Name: **Ribosome Biogenesis in Cancer Cachexia**

Cancer cachexia is a wasting syndrome characterized by the loss of skeletal muscle mass, which in turn is a predictor of poor prognosis and mortality in cancer patients. Maintaining skeletal muscle mass during cancer is also associated with longevity in this population. The synthesis of ribosomes, known as ribosome biogenesis, is a central mechanism regulating cell mass, including muscle cells. This investigation aims to determine whether ribosome biogenesis and ribosomal abundance in skeletal muscle is impaired during cancer cachexia in a genetically modified mice model of pancreatic adenocarcinoma (the KPP mice) that resembles muscle wasting in humans due to cancer cachexia. The KPP mice will be used to test the hypothesis on whether ribosomal abundance is affected in cancer cachexia and whether lower ribosome synthesis precedes the onset of cancer cachexia. Understanding the molecular mechanism of muscle wasting in cancer cachexia will allow us to design better therapeutic approaches.

Johnson, Jeffrey

Institution: *IL - Elmhurst University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jeffrey Johnson,
Robert Zita,
Anthony Campolattara

Abstract Name: **A limit to the prosocial spending effect: Parents are not happier spending money on their children than themselves.**

The finding that spending money on others (vs. the self)—particularly close others—promotes happiness has been well established.However, no research has investigated whether this prosocial spending effect emerges for parents when spending on their children. Testing this question is important for both the prosocial spending and parental well-being literatures. In a separate study, we found preliminary support for the hypothesis that parents are happier after spending on a child than themselves, but the study was only correlational and had some sampling issues. Therefore, in the current research we conducted an online experiment in whichparents (N= 228) were randomly assigned to recall and describe a memory in which they spent $20 onthemselves (personal spending), another person (prosocial spending), or on their child (child spending). After the manipulation they reported their positive emotions. Controlling for baseline positive emotions, parents were happier after reliving a time they spent money on someone else than themselves—the well-established prosocial spending effect. In contrast to our prediction, parents reported being similarly happy after reliving a time they spent money on themselves as in their children. As a stronger test of this hypothesis, future research should replicate this study with three improvements: 1) modify the writing prompt to focus on discretionary spending, 2) increase sample size, and 3) include a measure of inclusion of other in the self. Although prosocial spending is a strategy people can use to increase their well-being, it may not apply to parents spending on their children.

Johnson, Kelis

Institution: *NC - North Carolina State University*

Discipline: Public Health

Author/Contributors:
Kelis Johnson

Abstract Name: **The Effects of Socioeconomic Status on Childhood Obesity Rates**

This presentation examines how socioeconomic status affects childhood obesity rates and evaluates socioeconomic status as a determinant of health within the United States. Socioeconomic status does not only affect children's access to healthy foods but also affects what type of community they live in, physical activity spaces, and school resources available for their families. Through this research, I was able to evaluate the quality of life of children with obesity, the impact of race and ethnicity, and current intervention programs that address this issue. Prior research has studied the development of intervention programs across the country to explore the gap in health as it pertains to socioeconomic status, but research is limited to the results of community-specific programs. When addressing the issue of childhood obesity, health professionals must consider their holistic health to improve the lives of children. This issue must be addressed as a barrier for adolescents, but also their families and communities to increase the number of healthy habits and lives. Future research should focus on the implementation of nationwide obesity prevention programs in low-socioeconomic communities that address environmental and nutritional issues through various methods.

Johnson, Kera

Institution: *NY - York College*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Jamelia Jordan *Toodashwarie Singh* *Kera Johnson,* *Carrholane Golisca*

Abstract Name: **Using low-cost sensing technology to assess ambient and indoor air quality in Queens, New York during and after the COVID-19 Pandemic**

Air pollution is a leading cause of death in the U.S. Although ambient air quality improved during the COVID-19pandemic, indoor air pollution (IAP) remains a concern yet data are seriously lacking. Understanding the role of respiratory illnesses is critical. Americans generally spend about 90 percent of their daily lives indoors. With no indoor air quality (IAQ) health standards, high IAP levels imply greater health risks among vulnerable groups especially children, the elderly and persons suffering chronic respiratory and cardiovascular diseases. This study utilized the AirBeam2, to measure concentrations of particulate matter with a diameter of 2.5 micrometers (PM2.5) to investigate the differences between indoor and ambient PM2.5 levels in Queens, New York during the COVID-19 pandemic in winter, spring and fall of 2020 at six private homes, and in fall 2022. Meteorological parameters: temperature and relative humidity were monitored simultaneously. IAP levels were more than two times greater than ambient levels. Indoor spaces with little or no ventilation and direct emission sources such as smoke from cooking, particularly in kitchens and basements, resulted in higher PM2.5 levels that momentarily exceeded outdoor levels and those in more ventilated areas. Indoor PM2.5 concentrations were significantly higher than outdoor levels, p = 0.05. High ambient PM2.5 levels were attributed to vehicular traffic at street-facing sampling sites. Even under normal conditions, infiltration of PM2.5 through ventilation systems could further degrade IAQ. The identification of PM2.5 sources in this study can be useful in devising control strategies for improvement of IAQ and consequently, the alleviation of respiratory health effects. Further, these findings may be used as a basis for in-house modifications including natural ventilation and the use of air filters to reduce exposures, mitigate future risks, and prevent potential harm to vulnerable residents.

Johnson, Lillian

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **Philosophy/Religious Studies**

Author/Contributors:
Lillian Johnson

Abstract Name: **Finding our place with Being here.**

Martin Heidegger’s concept of Dasein, quite literally, Being here, is remarkably similar to thecore values of deep ecology, justly, what is our place within nature and how do we orientourselves around that place. By understanding our Beingness within the framework of Heideggerian philosophy that deep ecology is rather unknowingly biased off, we can better understand that our Being is the same as all Beings around us and thus conceptualize a world thatis non-Anthropocentric as we are all the same Being. The presence of “hyper objects” things thatwe can conceptualize but are unable to fully comprehend play into this greater sense of Being-in-the-world, as one can conceptualize one's role in an ecosystem, but struggles to understand whythe Being-in an ecosystem is so important as well.

Johnson, Linnea

Institution: *IN - Indiana University Purdue University Indianapolis*

Discipline: Psychology/Neuroscience

Author/Contributors:
Linnea Johnson *Laura Hawley* *Charles Goodlett*
Randall Roper

Abstract Name: **The Influence of Trisomy on Neurodevelopmental Milestone Achievement in the Ts65Dn Mouse Model of Down Syndrome**

Down syndrome (DS), caused by the triplication of human chromosome 21 (Hsa21), is the most common genetic cause of intellectual disabilities. The Ts65Dn mouse model of DS has a freely segregating chromosome that contributes a third copy of ~100 genes homologous to those found on Hsa21 and has similar phenotypic abnormalities such as reduced brain volume and body size. Little is known about how trisomy affects early brain development and how this alters the ontogeny of behavior in this mouse model. Assessing behavior during the postnatal period of rapid neurodevelopmental maturation may provide information on the influence of trisomy of Hsa21 on neurobehavioral milestone achievement. We hypothesize that the Ts65Dn mouse model will display delayed behavior and milestone achievement compared to the wildtype littermate mice. A series of neurodevelopmental assessments are administered on a rolling timeline for the first three postnatal weeks in trisomic and wild type pups. Assessments include weight (measuring physical growth), cliff aversion (measuring strength and coordination), and ultrasonic vocalization (measuring the number of calls and power of calls emitted). Preliminary results indicate trisomic mice display an approximate three-day delay in reaching growth and developmental milestones when compared to wildtype littermates. Delayed or altered brain development in the Ts65Dn mouse model has the potential to reduce performance on the neurodevelopmental tests given, indicating neurobehavioral deficits in the mouse model. Results from this study provide a baseline for future behavioral studies in DS developmental research and to better understand how trisomy affects developmental delay.

Johnson, Mary

Institution: *WI - Northland College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Mary Johnson *Lucas Lazorik* *Maren Peterson*
Rachel Fine *Wyatt Isakson* *Sharon Anthony*
Nick Robertson

Abstract Name: **Reusable polymers for the selective separation of metals from aqueous solutions**

What do smartphones, vehicles, and medical imaging devices have in common? Aside from being crucial components of a functional modern society, none of them could function without metals. As the demand for these technologies rises, so does the accumulation of metal waste. Recycling metals is a difficult task, and current recycling methods lack the selectivity required to separate them efficiently. In pursuit of improved recycling techniques, we are developing a series of polymers that can selectively absorb and release metals from aqueous solutions.
By introducing charged functional groups onto the polymer backbone, we can use the polymer to attract metal ions from aqueous solutions. This attraction between the metal ions and the polymer is called chelation. We can coax the polymer to selectively chelate one metal over another by changing the type of charged functional group on the polymer backbone. Synthesizing a library of polymers with different functional groups that have different binding preferences is our ideal goal, as it would allow us to isolate one metal from a solution of electronic waste, leaving the other metals behind.
We control the chelation and release of metals by changing the pH of the solution that surrounds the polymer. In a high pH solution, our polymer can chelate heavy metals, specifically copper, cobalt, and nickel, exhibiting a visible color change after metal uptake. After decreasing the pH, the polymer releases the metals. Our polymers can be reused to chelate and release metals for multiple cycles. By designing functional groups with highly selective, pH-dependent binding preferences, we can use this polymer system to recycle electronic waste, repurposing these useful metals. With the rise of modern technology, the development of improved metal recycling methods like these is becoming increasingly important.

Johnson, Megan

Institution: *IN - Purdue University Main Campus*

Discipline: **Biology**

Author/Contributors:
Megan Johnson,
Safia Janjua,
Andrew DeWoody

Abstract Name: **Population Diversity and Density Framework: DNA Barcoding of Indiana Predators**

Predators play a crucial role in maintaining a healthy ecosystem. Sitting on top of the food chain, predators keep prey population under control, thus initiating a cascade effect for maintaining biodiversity in an ecosystem. In Indiana, reported predators include coyotes, bobcats, and gray and red foxes. The data on the exact estimate of these predators' population in Indiana is lacking. This project was proposed to supply valuable information regarding predator diversity and population density. Predator species were identified using a DNA barcoding approach. DNA was first extracted from noninvasive samples of scat and hair of predators in Indiana using the QIAamp Fast DNA Stool Mini Kit. PCR was then performed using primers HCarn200 and CanidL1 and Taq 5X Master Mix. PCR products were purified using Zymo Genomic DNA Clean and Concentrator kit and samples were then sequenced by Genewiz. Finally, individuals were identified using a SNP based assay and the genotypes of each sample were used for calculating population genetic statistics, such as allele frequency, heterozygosity, and FST, which are indicators of population genetic health. The new knowledge generated through this study will be used in a broader modeling framework to estimate predator density and predator home ranges.

Johnson, Mollie

Institution: *WI - University of Wisconsin-Platteville*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Mollie Johnson

Abstract Name: **Looking in when you're left out: Regulating emotions following social exclusion**

As humans, we have a fundamental need to belong. When that need is threatened, it can lead to negative emotions, such as depression, self-doubt, negative or pessimistic thoughts, and more. Past research has found that the awareness of internal body signals (interoception) moderates the effects of exclusion. Our study extends this past work and focuses on the connection between social exclusion and interoception. We will use the experimental task Cyberball to induce feelings of exclusion and ostracism. Cyberball is based off the playground game, catch: the participant and two internet characters pass a virtual ball to each other and, eventually, (in the exclusion condition) the other characters stop throwing the ball to the participant. This induces the feelings of exclusion. Past studies have found that higher interoceptive awareness increases the effectiveness of the coping strategies used, such that the individual uses more effective emotion regulation for handling negative emotions from exclusion. This can be critical when strong emotions arise from social exclusion. We plan to replicate and extend past research on exclusion and interoception. We predict that individuals with greater interoceptive awareness will be less negatively impacted by social exclusion, induced via Cyberball. Pilot data and future directions will be shared based on preliminary findings from spring 2023.

Johnson, Wesley

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Wesley Johnson *Ryan Dobson* *Kora Witthun* *Parker Lay*

Abstract Name: **Race Predicts Reactions to Controversial Information About Racism in Policing**

Humans are not impartial receivers of information. Several cognitive biases are known to influence individuals' evaluations of new information. For example, individuals' assessments may be influenced by the identity or lived experience of the person presenting such information (i.e., a messenger), as well as the individual's own identity or lived experience. We investigated the degree to which people's reactions to scientific information about a controversial issue, racism in policing, are influenced by three factors: 1) participants' own racial identity (black or white), 2) the messenger's racial identity (black or white), and 3) the news platform on which the messenger presents their information (MSNBC or Fox News). In this study, participants were asked to read a handout containing a set of bulleted statistics that run counter to prominent narratives about the ubiquity of racist policing. For example, the handout included a breakdown of the number of unarmed white (26) and unarmed black (12) people that were shot and killed by the police in 2019, and it described data showing that many people drastically overestimate the number of unarmed black people that are shot and killed by police. Participants were led to believe through random assignment that the information came from either a black or white police chief who appeared on either Fox News or MSNBC, for a total of four experimental conditions. We hypothesized that participant racial identity, messenger racial identity, and news platform would independently predict participants' reactions to the information and also interact to affect participants' receptivity to the information. Contrary to expectation, the manipulations (messenger race and news platform) did not influence participants' reactions to the handout; however, one robust pattern in the data was that white participants viewed the message more favorably and were less inclined to censor it than were black participants.

Johnson-Leslie, Natalie

Institution: *AR - Arkansas State University*

Discipline: FAN Abstract

Author/Contributors:
Natalie Johnson-Leslie *Sai Hima Bindu Munagapati*

Abstract Name: **Impact of COVID-19 on Student-Teaching Practices: How Undergraduates Utilized and Researched Mursion Simulations to Bridge the Field Experience Gap**

Globally, COVID-19 was described as the biggest disrupter in the lives of individuals, including student teachers (Pokhrel; Chhetri, 2021). Student-teachers faced uncertainties, especially in field experiences, when schools, colleges, and universities were closed. Third-year student-teachers faced the challenge of having no field experience in their second year and third year of training. COVID-19 drove educators to utilize E-learning technology tools, such as Mursion simulations to continue teaching and learning (Aucejo, French, Araya, Zafar, 2020).This qualitative research presentation provides a comprehensive summary of how undergraduate student-teachers used Mursion simulation to bridge the field experience gap during the COVID-19 pandemic. Student-teachers answered the research questions (1) What was your experience teaching Mursion avatars and (2) In what way(s) did this teaching experience bridge the field experience gap?Undergraduate student-teachers applied the participatory action research (PAR) approach (Raynor, 2019) to this research. A total of 47 student-teachers completed the mandatory field experience using Mursion mixed reality simulation. Each student-teacher taught avatars thrice, for thirty minutes each time. There was one mandatory teaching episode recommended by the class professor, and student-teachers selected two other scenarios from the library of scenarios in Mursion. Following each teaching episode, student-teachers had a debriefing session with the simulation specialist. Finally, student teachers completed a personal reflection in Google Docs after each teaching episode. This research summarizes the results of the 47 student-teachers who participated in this research, using Mursion simulation.Student-teachers indicated Mursion was beneficial to future teachers' interactions with students and parents, realistic, intuitive to learning, a vital part of the teaching job, and Mursion bridged the teaching gap. The use of technological advances such as Mursion simulations can enhance the training of student teachers, similar to using simulations in the military, medicine, and aviation.

Johnston, Megan

Institution: *KY - University of Kentucky*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Megan Johnston *Marissa Annis* *Klaas van Wijk*

Abstract Name: **UVR2 and UVR3: Candidate Regulators of the Chaperone-Protease System in Chloroplasts**

The CLP protease system is conserved in bacteria, mitochondria, and higher plant plastids, such as chloroplasts, and maintains protein homeostasis by degrading a wide variety of substrates. Several CLP protease components have been identified in chloroplasts; however, more components are believed to be involved in regulating this complex degradation system. Previous affinity purification and mass spectrometry experiments identified the proteins UVR2 and UVR3 to be enriched in a stabilized CLPC1 chaperone-protease complex, distinguishing UVR2 and UVR3 as candidates for regulating CLP proteolysis. These proteins are especially of interest as UVR2 and UVR3 have no previously characterized function but contain UVR motifs, which are also found in three proteins already identified to be involved in the chloroplast CLP protease system: CLPC1, CLPC2, and CLPF. Furthermore, in bacteria, adaptor proteins regulate assembly and activation of CLP chaperones through direct interactions with their UVR motifs. As such, this study aims to understand the role that UVR2 and UVR3 play in the chloroplast CLP protease system. The objectives were to test whether UVR2 and UVR3 form dimers and interact with CLP proteins in vitro–as predicted by my homology modeling–as well as to determine if these proteins serve a redundant function in stress response. To test UVR2 and UVR3 interactions, I used restriction cloning to generate recombinant UVR2 and UVR3 proteins for future in vitro pull downs with recombinant CLP proteins. UVR2 and UVR3 have an almost (81%) identical protein sequence. To determine if these proteins serve a redundant function and a role in stress response, I established a double null uvr2uvr3 t-DNA insertion line, which will be used for future stress response phenotype studies. Characterizing the function of potential regulators of the CLP chaperone-protease system is significant, as unraveling the mechanisms of CLP substrate selection is key to understanding chloroplast proteostasis.

Johnston, Skylar

Institution: *WI - University of Wisconsin-Parkside*

Discipline: **Biology**

Author/Contributors:
Skylar Johnston

Abstract Name: **Rehydration of fluid preserved vertebrate natural history specimens.**

Fluid fixation and storage is one of the most common methods of preserving vertebrate natural history specimens to be used in research and teaching, especially for fishes, amphibians, and reptiles. Storage of such specimens requires well-sealed containers and/or periodic replenishment of the storage fluid to prevent desiccation. In many collections, however, especially college teaching collections, container failure and/or lack of regular curation can lead to specimens becoming dehydrated, which limits their utility for either teaching or research. A technique developed by John E. Simmons in which dehydrated specimens are exposed to high humidity has had success in restoring such specimens. We are investigating the efficacy of this technique by comparing rehydration in a chamber using Simmons' original protocol versus one in which the humidity within the chamber is boosted by the use of a saturated salt solution as the source of the humidity. We are using American Toad (Bufo americanus) specimens which were collected in 1965, but subsequently experienced dehydration at an undetermined date prior to the experiment.

Jolley, Alivia

Institution: ***UT - Utah State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alivia Jolley,
Bradley Findlay,
Thom Hallmark,
Hannah Domgaard,
Ryan Jackson

Abstract Name: Expressing and Purifying Type IV CRISPR Accessory Proteins

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats)-Cas (CRISPR-associated) adaptive immune systems defend bacteria and archaea against phages, plasmids, and other mobile genetic elements. Each Type IV CRISPR system contains a subtype-specific gene and is hypothesized to be essential for function. The Type IV-A system encodes ATP-dependent 5'-3' DNA helicase called CasDinG, while the Type IV-B systems encode a putative pyrophosphatase named CasCysH. Here we investigate the function of the type IV CRISPR systems by expressing, purifying, and characterizing the accessory proteins from the Type IV systems. This project is a first step towards understanding the structure and mechanism of Type IV systems and the possibility of repurposing Type IV systems in future applications.

Jones, Ben

Institution: ***IA - Iowa State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Benjamin Jones,
Mohamed Shabara,
Ossama Abdelkhalik

Abstract Name: Experimental investigation of the radiated waves from variable-shape wave energy converters

Optimal control solutions of the conventional fixed-shape wave energy converters result in bidirectional power behavior (reactive power), which means that the power take-off unit harvests energy at certain times and acts as an actuator at other time instants to create resonance in the system. Power take-off units that provide reactive power are complex and expensive. Variable-shape wave energy converters were recently introduced to eliminate or reduce the need for this reactive power requirement of the power take-off unit. This work proposes a design for the variable-shaped buoy, and an experimental radiation test was conducted. The experiment uses a buoy setup where an inflatable/pressurized spherical buoy was semi-submerged by using an external weight (plate). Four 3-D printed arms with lengths equal to the radius of the buoy were connected to this plate from one end and to the buoy's shell from the other end. Servo motors were connected to these arms such that when these servo motors rotate, the buoy's shape changes in a controlled manner. Wave gauges and accelerometers were used to measure the waves and buoy responses. A comparison of the radiated wave amplitude and the buoy heave response for the variable-shape wave energy converter and the fixed-shape wave energy converter was conducted. Also, the effect of varying the internal pressure of the inflatable buoy is investigated on its response. Results show that the heave response and the radiated wave amplitudes from the variable shape buoy are higher than the fixed-shape buoys.

Jones, Carina

Institution: *UT - Utah Valley University*

Discipline: **Biology**

Author/Contributors:
Carina Jones,
Zoe Thompson,
Manny Meraz

Abstract Name: **Starting a mouse lab from the ground up: A compliation of tools, experience, and campoarison of DNA sampling options for genotyping**

Mice have been used in laboratories for more than a century. Their physiological similarities to humans, short life expectancy, quick reproductive cycles, and ease of care make them model organisms. Research-intensive universities typically have pre-established vivariums with hundreds of mice and dedicated vivarium staff. Although some of this knowledge is available in published resources, some of it is difficult to find, or not available all in one place. Additionally, resources like The Guide for the Care of Use of Laboratory Animals are great for establishing IACUC protocols, it is not an all-inclusive tool for those trying to start a lab from the ground up. In this presentation, we will share information that we collected as we started a new mouse laboratory in August 2022. We will include what is needed before the mice arrive; IACUC protocols, equipment, and space preparation. The recommended quarantine protocol and parasite screening will also be discussed. We will also examine how to start a breeding program: prenatal care, birthing, post-natal care, and weaning. In addition, we will present data on how other types of DNA sampling (cheek swabs and hair follicles) compare to the common tail-tip amputation for genotyping purposes.

Jones, Elizabeth

Institution: *IA - Iowa State University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Elizabeth Jones

Abstract Name: **Feminine Heritage Within Stitches**

My project is comprised of two parts. The first part will be the creation of a quilt using a pattern my great-grandmother had published in a 2004 quilting magazine, though the pattern was made by her and her mother 54 years earlier in 1951 for her son's wedding. Most crafts have the same baggage, but I chose to analyze quilting because it is the craft I have the most expertise on and has been described as painting with fabric, thus providing an effective medium to compare to the fine arts. Through studying quilting as an ever-present art form, I will analyze and present concepts of gender, identity, and the perceived value of art, craft, and Women's Work.For the second part, I will research and write a historical over-view of American quilt making that includes personal anecdotes from my family history interwoven into the narrative with a particular focus on who did/does create quilts and when/why they are recognized and praised for quilt making both in the past and today. Quilts are often divided into functional quilts and artistic quilts. This disallows functional quilts from being a form of artistic expression and thus, created by artists. The reality is that even though traditional quilts have a purpose, they are not devoid of artistic expression; their creators imbue their work with messages, colors, forms, and balance intentionally while remembering the needs of their intended function. This paradigm of artistic value defines traditional quilts on a basis of lack, implying their lowered status when compared to the fine arts. I seek to describe and challenge this frame of mind through a braided essay referencing the quilt I will create.

Jones, Elizabeth

Institution: *PA - Moravian University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Elizabeth Jones,
Godfred Fianu

Abstract Name: **Ester hydrosilylations via a titanocene borohydride-PMHS reagent system**

An efficient and environmentally friendly way to reduce carbonyls.Carbonyl reductions are an important and fundamental reaction in organic chemistry. Synthetic organic chemists have routinely applied this transformation to form basic motifs in multi-step syntheses of complex organic molecules. An efficient and environmentally friendly way to reduce esters via carbonyl hydrosilylations with a titanocene(III) borohydride-PMHS system was carried out on a Schlenk-Line under inert atmosphere. It was discovered that the use of isopropanol as an additive accelerated both the formation of the active catalyst and the hydrosilylation of esters. The breadth of this approach was investigated by probing the reduction of a variety of esters with different steric and electronic properties. The product yields were measured using a variety of analytical techniques such as GC-MS, NMR, and FTIR. Overall, the optimized procedure for ester hydrosilylations via a titanocene borohydride-PMHS reagent system was successful for a large variety of substrates, and preliminary mechanistic studies indicate a titanocene(III) hydride species is formed in situ and this new complex is responsible for subsequent carbonyl hydrosilylations.

Jones, Faith

Institution: *AL - Samford University*

Discipline: Biology

Author/Contributors:
Faith Jones

Abstract Name: **The Importance of Play in Parent-Child Relationships**

While play is often misinterpreted as a trivialor optional part of childhood, research suggests that play has an essential role in the development of children and attachment. Previous research has also found that parental participation and perceptions of play can affect the attachment with their child. This current research study investigated the importance of play and parental involvement in play as it pertains to the parent-child relationship. Data was collected using two questionnaires examining parental play involvement and parent-child interactions. They were administered to parents of children under the age of 12 through an online survey. A total sample of 52 parents responded to the questionnaire. My results did not find a statistically significant relationship between the frequency of parent play and parent-child acceptance. However, the study did find that there was a significant correlation between parental attitudes toward play and parent-child interaction acceptance. Parental attitudes towards play were also positively related to the frequency of parent-child play. This study suggests that parents who have apositive outlook on the value of play are more likely to also have greater acceptance in their relationship with their child. This research demonstrates the importance of play in creating healthy family dynamics and typically developing children.Keywords: Parental play involvement, parent-child interactions, attachment, parent-child relationship, family dynamics, questionnaire

Jones, Faith

Institution: *NY - Pace University*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Kady Patterson,
Faith Jones

Abstract Name: **Parental status, beliefs about verbal ability, and support for behaviorist ideas on language development**

Parents and non-parents may differ in their support for the behaviorist approach to language acquisition. Behaviorist theory posits that preschool children learn language as a result of caregivers' modeling, shaping, and rewarding of correct verbal behaviors. In a previous study conducted in our lab, parents unlike non-parents, on average, did not endorse the behaviorist approach. It is not clear why this difference emerged, but an earlier study showed similar trends in beliefs about child development whereparents were less likely to attribute children's behavioral tendencies to "nurture" and more likely to associate these with their inherent nature. Further, the behaviorist theory is comparable to a controlling, pedantic style of parenting as opposed to an autonomy-supportive style. This is an important comparison as previous research has demonstrated that individuals who adopted a controlling style of parenting also believed that the verbal ability of their children was highly fixed, that is less malleable. We examined our survey data of 451 participants (226 parents and 225 non-parents) to determine if parental/non-parental status and beliefs about fixedness of verbal ability (via a pre-validated scale) predicted the overall endorsement of behaviorist statements on language development. We also included income and educational status as predictor variables. In addition to parental status, beliefs about fixedness of verbal ability emerged as a significant predictor but not income or education. Parents were less supportive of behaviorist statements than non-parents. The stronger the fixedness beliefs of individuals (regardless of parental status) the stronger the support for behaviorist statements on language development. We discuss these findings from a multidisciplinary perspective.

Jones, Faith

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: **Social Work**

Author/Contributors:
Faith Jones,
Sarah Hessenauer,
Deanna Guthrie

Abstract Name: **The Effects of Religion and Spirituality on the Social Work Profession**

This research study examines the topics of religion and spirituality in the social work profession. For years, social work educators and practitioners have reported grappling with the concepts of religion and spirituality. The comfortability levels of practicing social workers when it comes to addressing religion and spirituality with clients are vastly and starkly different. Social workers are often wary when discussing such topics due to concerns over crossing personal boundaries or ethical violations, or solely because the social worker themselves may not feel adequately educated on the subject or hold strong religious and/or spiritual beliefs. Although every client may not be religious or spiritual, those who are can have religion or spirituality as a pillar of their identity and often like to use this part of themselves in recovery or in their sessions. Social work is rooted in faith and yet faith is scarcely talked about in both social work education and social work practice. Following IRB approval, electronic surveys were sent to social work students and practicing social workers in order to learn more about their attitudes and behaviors when it comes to the topics of religion and spirituality in their practice. The research findings supported the researchers initial hypothesis that many social work students and social work practitioners do not have high levels of confidence when discussing faith or spirituality with clients. In addition, many do not feel adequately prepared or educated to do so. Therefore, social workers should be equipped in knowing how to handle or communicate in said situations and be able to readily adapt to whatever level of faith the client possesses. Moving forward, the researcher plans to further explore these topics in order to shed light on the importance of religion and spirituality in the future of the social work education and the profession.

Jones, Nadeem

Institution: *OH - Denison University*

Discipline: **Biology**

Author/Contributors:
Nadeem Jones

Abstract Name: **Whole Genome Analysis of Isolated Congenital Diaphragmatic Hernia**

Congenital diaphragmatic hernia (CDH) occurs when the diaphragm muscle fails to close during prenatal development, and the abdominal organs (stomach, intestines and/or liver) move up into the chest through the hole in the diaphragm. This congenital difference is clinically classified as being either isolated or syndromic. While a majority of CDH cases are classified as isolated (>60%), underlying genetic causes of these cases are rarely found (<5%). Therefore, our objective is to identify possible genetic diagnoses for isolated CDH. We hypothesize that most genetic contributors to isolated CDH will be caused by either mutations in genes whose function is limited to diaphragmatic development, mutations in regulatory elements of CDH genes that regulate those gene specifically in the developing diaphragm, or mosaicism (post zygotic) mutations in CDH genes with tissue limited mosaicism primarily in the diaphragm.Using whole genome sequencing of blood, skin, and diaphragm tissue of CDH patients, anin-silicoanalysis ofde novovariants was performed to identify possible contributors to CDH using various genetics databases. Integrative Genomics Viewer (IGV) was utilized to analyze the presence of mosaicism mutations between tissues.After the whole genomes of 15 CDH patients were analyzed for contributors to isolated CDH, a frameshift variant was identified in the rare known CDH gene, ZFPM2. Notably, this variant was observed only in the diaphragm tissue, indicating that it was a mosaicism mutation with tissue limited mosaicism primarily in the diaphragm. Our finding represents the first ever mosaicism mutation identified as contributing to the development of isolated CDH. This discovery can be implemented directly into clinical practice to provide recurrence risks of CDH for families. It can also indicate if future patients' CDH is syndromic or isolated which impacts management and prognosis for the child.

Jones, Rhett

Institution: *VA - James Madison University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Rhett Jones

Abstract Name: **Investigating the use of 3D Printing to Enhance the Capabilities of Electrochemical Machining**

In the past few decades, several non-traditional manufacturing techniques have been advanced to the point where they are now commonly used in industry. Electrical discharge machining (EDM) and 3D printing are two examples of such technologies that have matured and revolutionized industrial manufacturing. The electrochemical machining (ECM) process machines metal in a similar way to EDM and offers several advantages over the EDM process. ECM is a cold process that does not create a heat affected zone in parts and it is capable of creating better surface finishes in parts than EDM. This research is focused on the design and construction of 3D printed plastic tool blanks to allow rapid development of ECM tools in order to reduce the cost of manufacturing and to create tools with geometries that are difficult to produce with conventional machining techniques. The process for creating ECM tools involves first 3D printing a part that has a surface designed in the shape of an ECM tool before electroplating that surface with copper to create a conductive electrode. The current focus of our investigation is to demonstrate that a 3D printed tool blank can be successfully coated with copper, and subsequently used in an ECM process. Anticipated outcomes include observation of processes and tool blank characteristics that enable or inhibit copper coating, and description of features machined by a 3D printed tool via the ECM process.

Jonnavithula, Anila

Institution: *UT - University of Utah*

Discipline: Nursing/Health Science

Author/Contributors:
Anila Jonnavithula *Megan Tandar* *Scott Norton*
MacKenzie Woodrum *Sihem Boudina* *David Symons*
Rajeshwary Ghosh

Abstract Name: **Developing a Novel Fluorogenic-Based Assay to Measure Chaperone Mediated Autophagy Activity in Cells and Tissues**

Pathologies including cancer, neurodegenerative, and cardiovascular diseases, are caused by the accumulation of misfolded/damaged proteins. Intracellular protein degradation mechanisms play a critical role in the clearance of these disease-causing proteins. Chaperone mediated autophagy (CMA) is a protein degradation pathway that employs chaperones to bind proteins, bearing a unique KFERQ-like motif, for delivery to a CMA-specific Lysosome Associated Membrane Protein 2a (LAMP2a) receptor for lysosomal degradation. To date, steady-state CMA function has been assessed by measuring LAMP2a protein expression. However, this does not provide information regarding CMA degradation activity. To fill this dearth of tools / assays to measure CMA activity in cells and tissues from preclinical models, we generated a CMA-specific fluorogenic substrate assay. Methods: A novel CMA substrate fluorogenic probe (KFERQ-FP) was designed. KFERQ-FP when cleaved generates fluorescence. Using an inhibitor of lysosomal proteases, i.e., E64D [L-trans-Epoxy-succinyl-leucylamido(4-guanidino)butane)], responsible for degrading CMA substrates, the actual CMA activity was determined. Essentially, CMA activity = (substrate)fluorescence - (substrate+E64D) fluorescence. To confirm specificity of KFERQ-FP for CMA, scrambled CMA substrates were designed. Results: Heart, liver, and kidney lysates containing intact lysosomes were obtained from 4-month-old adult male mice (n=6 tissue samples/group). First, lysates incubated with KFERQ-FP displayed a time dependent (0-5 hour) increase in fluorescence vs. lysates incubated with scrambled substrates. These data validate the specificity of KFERQ for CMA. Of note, liver exhibited the highest CMA (6-fold; 0.05) > kidney (2.4-fold) > heart (0.4-fold) at 5-hour. Second, E64D prevented KFERQ-FP degradation, substantiating that KFERQ is degraded via lysosomes. Third, cleavage of KFERQ-FP and resulting fluorescence was inhibited in H9c2 cardiac cells transfected with LAMP2a vs. control siRNA. These data suggest LAMP2a is required for KFERQ degradation. Conclusion: We have generated a novel CMA activity assay for use in cells and tissues in a variety of experimental contexts.

Jordan, Jamelia

Institution: *NY - York College*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Jamelia Jordan *Toodashwarie Singh* *Kera Johnson*
Carrholane Golisca

Abstract Name: **Using low-cost sensing technology to assess ambient and indoor air quality in Queens, New York during and after the COVID-19 Pandemic**

Air pollution is a leading cause of death in the U.S. Although ambient air quality improved during the COVID-19 pandemic, indoor air pollution (IAP) remains a concern yet data are seriously lacking. Understanding the role of IAP in respiratory illnesses is critical. Americans generally spend about 90 percent of their daily lives indoors. With no indoor air quality (IAQ) health standards, high IAP levels imply greater health risks among vulnerable groups especially children, the elderly and persons suffering chronic respiratory and cardiovascular diseases. This study utilized the AirBeam2, to measure concentrations of particulate matter with a diameter of 2.5 micrometers (PM2.5) to investigate the differences between indoor and ambient PM2.5 levels in Queens, New York during the COVID-19 pandemic in winter, spring and fall of 2020 at six private homes, and in fall 2022. Meteorological parameters: temperature and relative humidity were monitored simultaneously. IAP levels were more than two times greater than ambient levels. Indoor spaces with little or no ventilation and direct emission sources such as smoke from cooking, particularly in kitchens and basements, resulted in higher PM2.5 levels that momentarily exceeded outdoor levels and those in more ventilated areas. Indoor PM2.5 concentrations were significantly higher than outdoor levels, $p = 0.05$. High ambient PM2.5 levels were attributed to vehicular traffic at street-facing sampling sites. Even under normal conditions, infiltration of PM2.5 through ventilation systems could further degrade IAQ. The identification of PM2.5 sources in this study can be useful in devising control strategies for improvement of IAQ and consequently, the alleviation of respiratory health effects. Further, these findings may be used as a basis for in-house modifications including natural ventilation and the use of air filters to reduce exposures, mitigate future risks, and prevent potential harm to vulnerable residents.

Jordan, Kaleigh

Institution: *GA - Georgia Southern University*

Discipline: Public Health

Author/Contributors:
Kaleigh Jordan,
Victor Ezeamii,
Oluwatoyin Ayo-Farai,
Atin Adhikari

Abstract Name: **Short term measurements of formaldehyde, moisture, and environmental PM near Georgia Southern University Buildings**

With the increasing use of carpet as flooring in buildings around Georgia Southern University and Statesboro's significant rainy weather, the environmental exposure levels of moisture via carpets are also increasing. The purpose of this study aimed to measure airborne moisture levels at various times of the day in the interior and exterior settings of University buildings to determine levels of exposure in relation to temperature, humidity (both hidden and pin-type), moisture, and overall microbial activities in carpet. Procedures/Methods: Samples will be collected at five different locations between 8:00 - 9:00 AM , 1:00 PM - 2:00 PM, and 4:00 PM - 5:00 PM on Tuesdays and Thursdays in the Fall 2022 and Spring 2023 semesters. Formaldehyde, and total particle concentration will be determined by the use of the DT-988 Particle Counter. Chlorine gas will be measured with the Aeroqual Series 500 Monitor (S-500). The total microbial activity in carpets will be determined by an ATP by the SystemSURE Plus V.2 Hygiena.·ResultsThe microbial activity range 0 to 2025, which was the peak value. The particle and ranges showed no particular trend between buildings depending on location and time of the day.·ConclusionThe preliminary data collected so far did not provide any trends for pollutants, probably due to low levels of pollutants released in the cold temperature of winter. Higher TVOCs were detected on the rainiest days of the study. We expect some variations of data in the measurements of next several months at elevated temperatures.

Jordan, Sean

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Blake Vander Weide *Lucas Williams* *Sara Multhauf*
Sean Jordan

Abstract Name: **EFFECTS OF ATYPICAL ANTIPSYCHOTICS IN RATS TRAINED TO DISCRIMINATE BETWEEN 22 AND 2 HOURS FOOD DEPRIVATION**

In humans, weight gain is a side effect of atypical antipsychotics. In rats, clozapine increases eating, but reduces food-related, operant behaviors. Ziprasidone has smaller or no effects on eating in rats. Given the short half-life of clozapine in rats, we tested the effects of acutely administered clozapine and ziprasidone on the discriminative stimulus effects of food deprivation. Male, Sprague-Dawley rats were trained to discriminate between 22 and 2 hrs (hours) of food deprivation in a two-lever operant task. Under 22 hrs deprivation, left lever presses were reinforced by a 45 mg food pellet. Right lever presses were punished with 8 seconds of darkness. Under 2 hrs deprivation conditions, the contingencies were reversed. Training sessions lasted until 10 reinforcers were earned or 15 minutes elapsed. Training continued until rats emitted 80% or greater condition appropriate responding before the first reinforcer was earned for 8 out of 10 sessions. After acquiring the discrimination (M = 71, SEM = 6 sessions), subjects were food deprived for 2 or 22 hrs and injected subcutaneously with either clozapine (1.0-5.6 mg/kg), ziprasidone (0.32-1.0 mg/kg) or vehicle (1.0 ml/kg). For the 5 minute or 5 reinforcer test sessions, responses toward either lever were reinforced under the FR 15. Test trials were conducted every 15 min for 2 hrs. After test session, food intake was recorded for 1 hour. Clozapine and ziprasidone did not induce hunger-like responses under 2 hrs deprivation. After 22 hrs food deprivation, clozapine (1.0-5.6 mg/kg) significantly reduced hunger-like stimuli induced by 22 hr deprivation, whereas ziprasidone had no effect. Under both deprivation conditions, clozapine decreased food intake, but ziprasidone did not. These data indicate clozapine decreases feeding-related behaviors in rats. Atypical antipsychotic medications have different effects on food-related behaviors in rats and humans

Jordan, Treeana

Institution: *MD - Bowie State University*

Discipline: **Biology**

Author/Contributors:
Jessica Shaw,
Treeana Jordan,
Tia Harris,
Kyle Pias,
Dr. Anne Wiley

Abstract Name: **Dietary preferences of invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge, Maryland**

Invasive species are a leading cause of environmental degradation in freshwater ecosystems. Invasive crayfish, for example, can displace native crayfish and consume large quantities of both aquatic macrophytes and native animals. While Maryland is home to three invasive species of crayfish, relatively little is known about their impacts to local food webs. Here, we collected invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge in Laurel, Maryland and performed a feeding experiment to understand their dietary preferences and likely influence on refuge food webs. Crayfish were housed in 20 x 12 x 10-inch glass tanks equipped with air stones and polyvinyl chloride pipes for refuge. They were offered native plants and animal matter in three separate week-long trials, and their diet preferences were quantified based on the percent of food mass remaining at the end of a trial. We also used the stable carbon and nitrogen isotopic composition of wild red swamp crayfish to understand how their dietary niche compares with that of a common, native omnivore, the eastern painted turtle (Chrysemmys picta picta). Our feeding experiment showed that on average, red swamp crayfish preferred smartweed (Persicaria sp.) over other species of aquatic plants and animal matter over native plants. We also documented substantial variation among individual crayfish – a finding echoed in wild crayfish's variable nitrogen isotope values. Finally, we observed considerable overlap between the red swamp crayfish's isotopic niche and that of the eastern painted turtle. These results provide insight into the impact of an invasive species within one of the largest green spaces in the Washington, D.C.-Baltimore corridor.

Joseph, Joel

Institution: *OK - University of Central Oklahoma*

Discipline: **Nursing/Health Science**

Author/Contributors:
Joel Joseph

Abstract Name: **The Effects of Animal Assisted Therapy in the Stress and Anxiety of Nursing Students**

Background: Nursing students experience stress and anxiety with a curriculum requiring study in both the didactic and clinical setting, adaptive style testing, and being held to a higher grading standard in order to move forward in the program. These high levels of stress and anxiety can inhibit the students' learning resulting in poor academic performance, serious health issues, and decreased emotional well-being.Purpose: The goal of this project is to explore the impact of animal-assisted therapy in the stress and anxiety levels of nursing students. Studies have shown AAT to be an effective intervention in relieving feeling of stress and anxiety by stimulating the release of neurotransmitters that promote relaxation, calmness, and general well-being. Pet therapy is a form of social support found to be effective in minimizing stress and anxiety in students.Methods: Nursing students in a baccalaureate program will interact with a therapy dog for thirty minutes prior to taking an exam. The participants will then complete a survey tool, The Human Animal Link: Modification of Stress in the Higher Education Setting, describing their experience with the therapy dog as well as the Pre-Exam Animal Visitation Program Student Survey (PASS) to evaluate the effectiveness of AAT.Discussion: Stress within nursing school is a given, but it is important for the nursing student to implement an effective stress reduction intervention to move forward in the program, graduate, and prevent early burnout with stressful experiences as a new graduate. In the classroom, ATT can provide a positive, stress-free environment to facilitate learning. Using AAT in university nursing programs can provideas an inexpensive intervention for students to cope with feelings of stress, anxiety, and depression related to higher education.Key words: animal-assisted therapy, stress, anxiety, nursing students.

Joseph, Sophia Marie

Institution: ***DC - American University***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Sophia Marie Joseph

Abstract Name: The Conquest of the Latinidad: Historical and Contemporary Colorism in Hispaniola

The research paper “The Conquest of the Latinidad: Historical and Contemporary Colorism in Hispaniola” has been composed under the subset of Race, Gender, and Sexuality Studies. Historically, Latinidad was used as a blanket term to encompass various Latine identities: however, it has come under fire for its lack of inclusion towards race in recent years. Race has become engrained to Latin American society, as a leading result of the European colonization of Latin America. Specifically, a multi-ethnic, radicalized society has been created in Hispaniola as a result of the combination of European, African, and Amerindian identities. This research seeks to answer “To what extent has colorism impacted Haitian and Dominican society?” The purpose of this research is to analyze the foundations of colorism in Hispaniolan society, as well as its contemporary effects. Since inception, Latin America has existed as an amalgamation of identities. Europeans arrived in Latin America in the fifteenth century, leading to a mixture of identities. The Spanish created Las Castas in order to divide these identities into subsects (i.e. mestizo and mulatto).The implementation of this system can be seen on the microcosm that is Hispaniola, which represents the modern-day Dominican Republic and Haiti. In Haiti, the French established Code Noir to outline Black freedmen and slaves treatment on the island.As a result of these systems, colorism dominated early Hispaniolan society, with its ramifications continuing contemporarily through instances such as antihaitianismo sentiments in the Dominican Republic.The research methodology for this paper is the usage of previously written academic sources, interviews with academics, and surveys to create conclusions regarding colorism. The expected conclusions are that Hispaniolan society was built upon a foundation of colorism due to Code Noir and Las Castas and has become an integral part of Hispanolan identity due to the commodification of race.

Journet, Starla

Institution: ***IL - North Central College***

Discipline: Sociology

Author/Contributors:
Brittany Benson

Abstract Name: Neighborhood Effects: An Ethnographic Study of the South Loop, Pilsen, and Austin Neighborhoods in Chicago

Place is more than just the physicality or location of something. It is also a productof buildings, streets, the people who surround it and occupy that space. Place cannot exist without the actors and the actors cannot exist without the place. Both play an essential function in understanding neighborhood effects and the necessary equipment for living. It is important that people develop the necessary knowledge and equipment for living to function and make the best of their daily interactions that take place in society.Chicago is composed of many different neighborhoods;however, each neighborhood poses different challenges with respect to the equipment for living or the practical routines individuals need to figure out and make their way through each community. This study draws upon first-hand observations, demographic analysis, and interviews to understand and compare these different routines in the South Loop, Pilsen, and Austin community areas of Chicago. Through this study it was found that these communities vary greatly in terms of access to clean and healthy food, relationship with the police and the community,diversity, homelessness, and access to everyday resources. These findings help to understand the importance of building a relationship with the community around you and why it is important for people to understand the daily equipment for living in these neighborhoods in Chicago.

Joyce, Miah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Nursing/Health Science

Author/Contributors:
Miah Joyce *Dalete Mota* *Heather Iverson*
Kaitlyn Moore *Theresa Dachel*

Abstract Name: Development and Implementation of a Tailored Breast Cancer Awareness Program at a University in the Midwest

Breast cancer (BC) is the leading cause of global cancer. Early diagnosis through screening has decreased mortality rates; however, the population's awareness of BC screening is unclear. Members of university settings are particularly an advantageous target population for increasing BC awareness because they are primarily active adults, potentially strong disseminators of knowledge, influencing the community around them.This project aimed to design and implement a breast cancer awareness program tailored to the needs of a community at a Midwestern university. During the 2021-2022 academic year, an online survey on breast cancer awareness was emailed to all undergraduate/graduate students, faculty, and staff of a university located in the Midwestern U.S. The participants' responses were critically reviewed and organized into categories (phase 1), and data were used to plan activities to promote breast cancer awareness in the following academic year (phase 2). Phase 1: Over one thousand university community members responded to the survey, and approximately 200 participants shared specific suggestions on what information they perceived as needed and how they would like to receive it. Survey results suggested the need for awareness activities related to BC risk factors and screening measures. Participants also shared their interest in learning through posters, presentations, apps and shared stories, besides understanding university resources related to BC. Phase 2: The team developed a series of events for 2022 Pink October, consisting of breast cancer awareness tables to share the information signalized by survey participants, opportunity for conversations with health providers, and group meeting with faculty/staff who shared personal stories about BC experience. Students, faculty, and staff were invited to participate in all events. Results will be used to inform awareness strategies for 2023 Pink October activities.

Joyner, Abbey

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Abbey Joyner

Abstract Name: The Associations between Belongingness, Trust, and the Willingness to Donate to One?s Alma Mater

Donations are a vital part of keeping universities up and running across the globe. Thus, it makes sense that universities have a vested interest in fostering relationships with students that will generate future donations. This study examines the degree to which feelings of belongingness, trust, and engagement in campus activities affect an individual's willingness to donate to their alma mater. The 72 participants in this study represent a diverse group of students at the University of Wisconsin-Eau Claire. The findings indicate that feelings of belongingness with the university and the belief that one can trust the university are more strongly associated with a willingness to donate. Engagement in campus activities was not significantly associated with a willingness to donate. Thus, we learned that while it is important for a university to provide opportunities for students to engage in campus life, the university should spend equal time fostering a sense of belongingness and trust with their students.

Juarez, Sonia

Institution: *TX - Texas Woman's University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Sonia Juarez,
Lori Abalos,
Robby Petros

Abstract Name: **Synthesis of Doxorubicin-Protein Conjugates Via Cobalt Coordination Chemistry: Conjugates of Transferrin and Immunoglobulin G**

Protein-drug conjugates are a rapidly expanding family of therapeutics that hold significant potential to ameliorate off-target toxic effects commonly observed in patients undergoing chemotherapy. In this context, the protein acts as a nanoscale delivery vector that alters the biodistribution of the drug upon administration by restricting its unhindered distribution in vivo. Researchers at TWU are exploring the use of cobalt coordination chemistry in the synthesis of doxorubicin-protein conjugates. Previous work has shown that cobalt can be used to crosslink amine-containing molecules in a reversible reaction that only utilizes the lone pair of electrons on nitrogen to form a dative bond with cobalt. Doxorubicin was chosen for initial studies because it contains a primary amine that could be crosslinked with lysine residues on a protein to form a protein-drug conjugate. Conjugates of dox with albumin, transferrin, and immunoglobulin G were investigated to demonstrate the broad applicability of the method for bionconjugation reactions. Drug loading was investigated by HPLC and the conjugates further characterized by dynamic light scattering, mass spectrometry, and calorimetry. Details of the effects of reaction conditions on synthesis of stable conjugates will be discussed.

Jun, Jaehee

Institution: *AR - John Brown University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Jaehee Jun

Abstract Name: **Systematic review of ?7 nicotinic acetylcholine receptor on anti-inflammatory effects against T-helper 2 cells induced inflammation**

The nicotinic acetylcholine receptor (nAChR) is an ionotropic receptor that accepts acetylcholine as the primary ligand. Nicotine, a stimulant in the central nervous system (CNS), can also bind to nAChR as the receptor's name suggests. The activated nAChr regulates the cation flow such as Na+, K+, and Ca2+ through the plasma membrane, which is fundamental for neural signaling. nAChr is a pentamer composed of five subunits among diverse subunits: α1-10, β1-4, γ, δ, and ε. Amongst the numerous possible pentamer combinations, α7 homo-pentamer is the principal type that has been studied the most. The α7 nAChR is also present in nonneuronal cells (such as blood cells) throughout the human body as well as the CNS and PNS. These α7 nAChR are thought to play a quintessential part in terms of neuroimmunomodulation as they are involved in physiologically crucial pathways such as the cholinergic anti-inflammatory pathway (CAP). This study explores the participation of α7 nAChR in other anti-inflammatory pathways such as the T-helper 2 cell (Th2) response, to investigate its mechanism of action and potential modulation paths in allergic inflammation.

Jung, Hye Lim

Institution: *PA - Messiah University*

Discipline: English/Linguistics

Author/Contributors:
Hye Lim Jung

Abstract Name: **Meeting the Monster: A Creative Exploration of Korean Culture and Mythology**

My project unravels my identity and relationship to Korean culture as part of the Korean diaspora, specifically as a Korean born in the Philippines, who grew up in predominately Papua New Guinean and white-American communities. I explore how Korean culture impacts me by incorporating Korean folklore and myths into my original creative writing piece, a hybrid of short fiction and memoir. By reclaiming Korean folklore and myths as a part of my own story, I gain insight into the relationship between my inner world and ancestral history while showing the relevancy of a nation's ancient narratives to a wider audience. Korean folklore and myths, such as the legend of Barikongjoo and the tale of Shim Cheong, cradle the lives of my ancestors. They show the Koreans' fears, anger, and desires. It is undisputable that the emotional, spiritual, and societal challenges a nation and family generations dealt with in the distant past impact the lives of individuals today. To see how I am directly shaped by my ancestor's past lives, both psychologically and spiritually, despite living amongst non-Koreans, I recast the stories that my ancestors created, deemed as important, and orally passed down to me. Even as a third culture kid who was born and grew up outside of Korea her whole life, I find a burning desire to connect to Korean culture when I read and listen to Korean folklore and myths as I try to form my own identity amidst non-Korean cultural environments. By braiding my own personal narrative with Korea's famous folklore and myths, I will show the parallels and interactive relationship that my own story has with the greater stories of Korea itself and why the world needs to retain and revive the culture these ancient stories have been preserving for us.

Jung, Joanne

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Nursing/Health Science

Author/Contributors:
Joanne Jung *Alvaro Rojas Pena* *Daniela Pelaez-Palacio*
Brianna Spencer *Spencer Wilhelm* *Kristopher Urrea*
Daniel H. Drake *Robert Bartlett*

Abstract Name: **Markers for viable donor hearts during long term normothermic ex-vivo perfusion**

The average donor heart will last for approximately four to six hours when preserved with static cold storage, adding another limiting factor to the donor organ supply. This research aims to identify markers of a viable donor heart as it perfuses for extended durations of time outside of the host. After standard heart procurement under anesthesia, pig hearts are placed in a normothermic ex-vivo perfusion apparatus (M-Flow), which provides O2 and nutrients and removes CO2 and toxins for 24 hours. Oxygen is provided via a blood-derived solution infused into the coronary arteries via the aorta, and venous blood from the heart is collected from the pulmonary artery. We analyzed data from four hearts (241-282 g) preserved for 24 hours with the MFlow system. Left ventricular systolic pressure (LVSP, ideal: >25mmHg), heart rate, cardiac rhythm, lactate (ideal: <4.5 mmol/L), and glucose (ideal: 80-120 mg/dL) were monitored continuously and collected hourly. All hearts were perfused successfully with M-Flow for 24 hours. The heart rateswere between 60-120 bpm, and one heart required pacing. LVSP was maintained >25 mmHg (25-86 mmHg) while lactate values were <4.5 mmol/L (1.1-4.4 mmol/L) throughout the whole experiment. Glucose was within normal values except for one experiment that required higher supplementation of glucose throughout the study. The use of the M-Flow system to perfuse and preserve hearts for 24 hours proves to be successful as all cardiac function variables (heart rate and LVSP) and biomarkers (lactate and glucose) were sustained in a similar and consistent fashion to published studies by our group. Therefore, the M-Flow apparatus is a novel device that uses artificial intelligence to autoregulate blood flows and oxygen delivery based on algorithms.

Kachroo, Hena

Institution: ***KY - University of Kentucky***

Discipline: Physics/Astronomy

Author/Contributors:
Hena Kachroo,
Christopher Crawford

Abstract Name: Designing a Uniform Magnetic Field for nEDM Experiments

According to the Big Bang Theory, equal parts of matter and antimatter should have been created in our Universe. Now, it is predominantly matter. Understanding the differences between particles and anti-particles through CPT symmetry could lead to insight into our existence and reshape the Standard Model of physics. This matter – antimatter imbalance can be explained with the detection of a non-zero electric dipole moment within the neutron (nEDM), which violates these symmetries. To detect annEDM, an extremely uniform magnetic field is required because neutrons are hypersensitive to magnetic fields. The main goal of this project is to design a uniform magnetic field that will be used measuring thenEDM. This magnet will be a double cosine theta coil. The design includes a cylindrical, double layer aluminum skeleton that will serve as the base of the magnet and skins to surround it. These skins will contain clips which will secure the wires in place and make the field more uniform. Once the design of the magnet has been finalized and all components have been 3D printed, the magnetic field can be mapped using a robotic mapper and MATLAB. This could then be used to understand what adjustments would need to be made on a design level to improve the electromagnet's uniformity.

Kaiser, Maggie

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Psychology/Neuroscience

Author/Contributors:
Maiya Nate *Katherine Osborne* *Maggie Kaiser*

Abstract Name: Unconscious Bias or Trainable Attitudes? Training Implicit Biases That May Be Detected in the Implicit Association Test

Implicit Association Tests (IAT) are intended to measure beliefs that people are unable to admit (Project Implicit).Architects of the IAT acknowledge that results are onlyweakly correlated with measurable behaviors.The purpose of the current research was to determine whether a neutral implicit association could be trained into participants and subsequently be detected on an IAT.Participants were trained to associate negative words with angular shapes, and positive words with rounded shapes. Training sessions presented angular or rounded shapes, followed bypositive or negative words. Participants had to press "correct" or "incorrect" buttons depending on the shape and word association shown. After completing all training sessions, participants were given an IAT to determine whether they showed an implicit preference for rounded shapes. The IAT was created using the experimental design utilized by the IAT Website according to the methodological designs provided by the authors (Project Implicit) and replication studies (Jain et al, 2022). Data collection is currently ongoing.During the training session, trainees' reaction times were tracked to measure the strength of the associations being developed between shapes and positive and negative stimuli.After completing the IAT, trainees' scores on the rounded/angular shape IAT will be analyzed using the standard chi-squared analyses to identify the presence and strength of implicit associations.Additionally, using a X2 test of independence, trainees' IAT scores will be compared to scores of untrained participants who complete the same IAT.If results indicate that trainees exhibit implicit associations between rounded shapes/positive words, and angular shapes/negative words, and do so to a greater extent than control participants, this will suggest that implicit associations detectable by IATs can be formed quickly, and with relatively few exposures to previously nonexistent associations.These findings hold implications for understanding implicit associations and contribute to conversations on developing bias awareness training.

Kale, Mihir

Institution: ***KY - University of Kentucky***

Discipline: English/Linguistics

Author/Contributors:
Mihir Kale

Abstract Name: Linguistic Nationalism in Hispanic Country Constitutions

As the “law of the land,” a country’s constitution defines the institutions and values that it finds essential to a functioning society. Among the plethora of these themes discussed in a constitution is the issue of language, particularly the official status of a certain language and its function in society. When the rights and powers of a certain language make it dominant over other languages in the country, it creates a dynamic known as linguistic nationalism, where language is used as a tool to exert control over other groups in a country. Particularly prominent examples of linguistic nationalism exist throughout the Hispanic world, where the Spanish language was imposed on indigenous societies during the period of colonialism. Although the Spanish language remains the de facto lingua franca in much of the Spanish-speaking world in the post-colonial world, each of the countries approached its relationship to a country's collective national identity. This often translates to the Spanish language exerting continued dominance over indigenous languages. Employing Critical Discourse Analysis methodology, this study explores the role of the Spanish language in Hispanic constitutions, bridging linguistic discursive elements to the ideology of a constitution’s framers. Through this methodology, three separate cases of Spanish’s role in society emerged. The first is Spanish’s role as the sole official language, maintaining its hierarchy over indigenous languages. The second places Spanish as a co-official language, creating equity between indigenous communities and Spanish. The third is the lack of any language as official, removing Spanish’s dominance over society through intentional linguistic ambiguity. This application of Critical Discourse Analysis develops the understanding of the Spanish language’s status in post-colonial Hispanic constitutions, and how linguistic nationalism is engendered and institutionalized through these documents.

Kalluf Faria, Felipe

Institution: ***FL - University of Central Florida***

Discipline: Physics/Astronomy

Author/Contributors:
Felipe Kalluf Faria,
Luca Argenti

Abstract Name: Attosecond electronic excitations in molecules

Light-induced electronic excitations are at the basis of many fundamental physical processes, from the photoelectric effects in materials, to light harvesting in photosynthetic organisms, to cancer-inducing radiation damage in organic tissues. These processes unfold at the ultrashort time scale of a few attoseconds (1 as is one billionth of a billionth of a second). Only recently, with the development of new laser technology capable of delivering isolated extreme ultraviolet pulses with a duration of only a few tens of attoseconds, has it become possible to experimentally observe these electronic excitations in real time. To interpret the results of these experiments, however, the assistance of advanced quantum-mechanical calculations is required. Indeed, sophisticated theory is needed to draw the connection between the detailed motion of electrons, at the microscopic scale, and their signature in the macroscopic observables recorded in the lab. In this work, we present a theoretical time-resolved study of the electronic dynamics triggered in carbon monoxide, CO, by an ultrashort pulse of ionizing radiation. To do so, we use ASTRA, a new molecular ionization code developed in our group, to reproduce the absorption by CO of an extreme ultraviolet attosecond pulse (pump), in the presence of a delayed infrared dressing field (probe), as a function of the pump-probe delay. The pump pulse causes the valence electrons in carbon monoxide to slush back and forth across the molecule. By perturbing the system at different times, the probe IR pulse is able to reveal the stage of this periodic oscillation, thus allowing us to reconstruct and even control it.

Kalnina, Daina

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Daina Kalnina *Evan Weiher* *Zach Rohde*
Kya Meunier *Chase Fillion* *Chris Connoy*
Molly Halverson *Lydia Przytulski*

Abstract Name: **Spider functional community assembly along a stress gradient in Northern and Southern Wisconsin forests**

Ecological communities are smaller subsets of overall larger species pools.Ecological selection can cause a community to have less than expected functional trait diversity, narrowing it to a small subset of features (trait clustering). There are also processes, such as competition, that can cause communities to have greater than expected trait diversity (trait overdispersion), especially where ecological stress is low (i.e., the stress-dominance hypothesis). Ecological selection can also alter the mean trait values of communities.There has been considerable work on the functional assembly of plants and fish, but little is known about assembly of terrestrial invertebrate animals. We placed three pitfall traps in 40 locations in Northern forests (i.e., mainly evergreen conifers) and Southern forests (i.e., mainly deciduous trees) across a strong gradient in soil moisture. We measured the size and asymmetry of spider body, leg, eye, and mouthpart traits because they are related to resource acquisition. We used Monte Carlo simulations to estimate the amount of functional trait diversity and mean trait values that would be found if community assembly was caused by random ecological drift. The simulations used three species pool scales: regional (all species), within Northern or Southern Wisconsin forests, within specific forest types. Overall, trait diversity was less than expected by chance, but the effect size was smaller when using smaller species pools.Spiders were larger in Southern forests, but mean trait values were unrelated to soil moisture.Size trait diversity increased with moisture in Northern forests, but not in Southern forests.This partially supports the stress-dominance hypothesis.Asymmetry trait diversity was also unrelated to moisture.Functional community assembly differed in Northern versus Southern forests, and so there are unique assembly rules for each region.

Kaltenbaugh, Emily

Institution: *PA - Juniata College*

Discipline: Communication/Journalism

Author/Contributors:
Emily Kaltenbaugh

Abstract Name: **Backwards and in High Heels: How Sexism Has Been And Continues to Be Portrayed on Screen**

Everyone's heard that Ginger Rogers did everything Fred Astaire did, but in high heels and backwards. How has the double standard of higher expectations affected women on screen? How has it changed over time? Through a feminist critique, my paper analyzes representative mainstream films and the way in which women are portrayed. It also discusses and evaluates the historical context within which our cultural values evolve. In order to examine their portrayal, I evaluate the effect of patriarchy, the male gaze, and enlightened sexism. The patriarchy is a social construct in which limitations are placed on women and can be most easily seen in the media. The male gaze also affects the ways in which women are portrayed, especially on screen where the camera directs the audience's eye. Enlightened Sexism is the concept of how embracing femininity and sexuality is seen as a way for women to take back their power but in actuality ignores the history of female sexual oppression. This paper draws on previous work: How Societal Structures Contribute to Means Girls (2004) and Mean Girls: The Musical (2018): A Feminist Critique of Mean Girls, and expands the scope of films analyzed to include films such as Top Hat (1935), Star Wars: A New Hope (1977) and Little Women (2019). As an interdisciplinary undergraduate student my analysis combines Communication and History. This feminist critique demonstrates a correlation between the patriarchy and societal values in how women are portrayed on screen. As the portrayal of gender has changed in films, we would expect to see a change in cultural values.

Kalvig, Faith

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Faith Kalvig

Abstract Name: **Comparing Historic Artifacts from Two Archaeological Sites on the Red Cliff Indian Reservation, Gaa-Miskwaabikaang**

My research took place in Red Cliff, Wisconsin, as part of Gete Anishinaabe Izichigewin Collaborative Archaeology Project (GAICAP), a community-based effort that brings archaeology under the control of local Ojibwe people. Under the direction of the Red Cliff Tribal Historic Preservation Officer, Marvin DeFoe and professional archaeologists, I conducted field and laboratory research during summer 2022. In doing this I compared glass, metal, and ceramic artifacts from two roughly contemporary late 19th and early 20th century archaeological sites on tribally owned lands: Frog Bay Tribal National Park and the Old Pageant Grounds. This research has identified differences in the kind of artifacts present at these two historic sites and helps determine what each area was used for within the community. Outcomes include narrowing time-frame of usage and identifying specific objects and their purposes. All of this is done in the interest and at the request of the Red Cliff community to increase their knowledge of their sites in order to better protect them.

Kamara, Abdul

Institution: *IL - Augustana College*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Abdul Kamara

Abstract Name: **Using Remote Sensing to model suitable habitats for Rusty Patched Bumblebees in Rock Island, Illinois**

Species biodiversity is an important foundation for healthy ecosystems. When a species is endangered/threatened, it is a sign that the ecosystem is slowly failing. This is especially important for the Rusty Patched Bumble Bee because as a pollinator, they contribute to our food security and the healthy functioning of our ecosystem. In 2017, the Rusty Patched Bumble Bee was federally listed as endangered; therefore, more work needs to be done to conserve this species. Since habitat loss and degradation has been a key factor in the decline of this species, my research has focused on finding suitable habitats for the Rusty Patched Bumble Bee. My research uses Image Classification in Remote Sensing technology to identify diverse floral resources in people's yards, road edges, arboretums, and even in forests within the city of Rock Island, Illinois. The Rusty Patched Bumble Bee has been found to do really well in urban/suburban landscapes, which is somewhat unique for a rare species. However, with its recent listing, there is not much known about them; therefore, this research will help identify habitat needs and thresholds, identify potential areas to survey, and find potential conservation zones for the species.

Kamath, Abhishek

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Abhishek Kamath,
Vijay Singh,
Laura Volpicelli-Daley

Abstract Name: **Implications of LRRK2-G2019S Mutation on DARPP32 Phosphorylation and Cortical Physiology in Parkinson's Disease**

Parkinson's Disease (PD) is a neurodegenerative disease characterized by degeneration of dopaminergic neurons in the substantia nigra pars compacta (SNpc) of the midbrain. Over 10 million people worldwide are currently diagnosed with PD, and about 15% of PD cases are familial and majority of these are attributed to mutations in the leucine rich-repeat kinase 2 (LRRK2) gene. LRRK2 is highly expressed in medium spiny projection neurons (SPNs) of the striatum. SPNs express either D1 or D2 dopamine receptors that relay information to the basal ganglia and thalamic nuclei about motor decisions that are then sent to the cortex. The LRRK2-G2019S mutation influences SPN excitability by inhibiting activity of protein kinase A (PKA) and regulates its ability to phosphorylate dopamine and cAMP-regulated phospho- protein Mr 32,000 (DARPP32). Selective phosphorylation of DARPP32 regulates protein phosphatase-1 (PP-1) activity and may play a key role in regulating activation of AMPA and NMDA receptors, both of which affect long term potentiation (LTP). Revealing a connection between the LRRK2-G2019S mutation and glutamate receptor activity via the phosphorylation of DARPP32 will be groundbreaking in allowing researchers to explore the mechanisms by which the basal ganglia pathways and PD dopaminergic signaling pathway is affected by the LRRK2-G2019S mutation. Preliminary results indicate a consistent reduction of DARPP32 in the cortex of LRRK2-G2019S knock-in mice, and I am further investigating the effect of the mutation on glutamate receptors in primary mouse models.

Kamel, Mary

Institution: *CA - Irvine Valley College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: **Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel On-going Investigation**

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Kamrowski, Connor

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Nichol He,
Connor Kamrowski,
Jordan Allen,
Rahul Gomes,
Sushil Garg

Abstract Name: **A Deep Learning Model for Pancreatic Ductal Adenocarcinoma Chemotherapy Outcome Prediction**

Pancreatic Ductal Adenocarcinoma (PDAC) is an aggressive abdominal malignancy, with an overall 8.5% 5-year survival rate. PDAC is often detected too late for surgical resection and is associated with resistance to chemotherapy and radiation. To minimize ineffective chemotherapy treatment, the ability to identify tumor characteristics and predict chemotherapy response is essential. Morphological characteristics of PDAC tumors can be extracted from CT scans and are associated with tumor characteristics and behavior. In this research, a deep-learning system for predicting chemotherapy outcomes based on CT scans is being explored. To establish the foundation for this system, a segmentation model is being developed and optimized. The effects of novel data augmentation techniques, including window-leveling, histogram matching, five-fold cross-validation, and YOLO bounding-box-based cropping on segmentation accuracy are examined. The morphological characteristics of PDAC tumors, upon initial inspection, revealed that over 50% of Radiomic features are statistically different between normal and abnormal patient populations. By establishing techniques for standardizing CT scans from different datasets and using a flexible segmentation model, we aim to create a pipeline for pancreas segmentation followed by tumor extraction using Radiomic texture analysis.

Kangas, Riley

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Business

Author/Contributors:
Harrison Thiry,
DeNae Bube,
Riley Kangas

Abstract Name: **Neurodiversity, Personality, and Mental Health Challenges**

Prominent variations of neurodiversity include autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), and dyslexia. Institutions of higher education should foster an inclusive environment for these individuals, which includes understanding common behavioral attributes, limitations, predictors, prevalence, and desirable adaptations.Participants in our pilot study were 23 females and 8 males (31 total), drawn from convenience and student sources. The primary goal in this first foray into investigation of neurodiversity in higher education was to focus on personality and related associations with common attributes of these three forms of neurodiversity. Follow-up with larger samples is planned to investigate their prevalence and effects / limitations in the college environment.Results found that openness to experience correlated negatively with typical ASD symptoms such as difficulty with social norms (r = -.52, .01). Neuroticism correlated positively with ASD symptoms (r = .46, .05), and individuals higher on neuroticism were more likely to suffer burnout (r = .74, .00001). Participants endorsing ADHD symptoms also reported higher burnout (r = .50, .01), and participants not reporting ADHD symptoms reported higher levels of self-care activities (r = -.46, .01).Although this pilot study focused on associations and not causality, our results nonetheless identify several correlates of neurodiverse symptoms and provide direction for follow-up research. The potential benefits of enhanced understanding of neurodiversity in higher education include targeted resources, classroom adaptations, and counseling resources. In short, continued research offers great potential to afford neurodiverse students the same opportunity to succeed as neuro-normal students.

Kaniuk, Julia

Institution: ***IL - Loyola University of Chicago***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Julia Kaniuk

Abstract Name: Breakthrough or Quackery?: An Exploration of Yoga within US Economy and Healthcare

Over the past century, “spirituality” as an alternative to “religion” has absorbed many non-western practices. In the contemporary United States, yoga has transcended the world of “spiritual” practice and implicated itself into a diversity of contexts as a method of practicing spirituality and mindfulness outside the bounds of institutionalized religion. Yoga has also come to be perceived as a method of healing and has been absorbed into practices of alternative medicine. It has also become a popular form of exercise for those who shy away from aggressive exercise practices, like bodybuilding. Furthermore, the capitalist spirit of the United States has taken all of these iterations of yoga and turned them into a product which is marketed and sold to those willing to explore its purported benefits.In this presentation, I will examine why yoga has become so popular within the fitness and wellness industries as opposed to the US healthcare system, which is still substantially reliant on biochemical treatments. Who is attracted to yoga as a practice? As business empires built on yoga have flourished for decades, what continues to drive the customer base? I will argue that one of the main attractions of yoga and related practices is the healing sense of community that they generate. Sharing a path with others towards a similar goal, whether it is physical or spiritual mindfulness, makes the journey easier because every achievement and setback can be appreciated in a collaborative environment. Whether the collaboration is virtual or in person, yoga as both a spiritual and a healing practice is sustained by shared experiences that validate struggles while also testifying to the triumphs of said practices. Given the success of yoga and similar practices as forms of alternative medicine, what can we learn about implementing alternative medicine within the US healthcare system?

Kao, Alexander

Institution: ***PA - University of Pittsburgh***

Discipline: Nursing/Health Science

Author/Contributors:
Alexander Kao *Weiwen Wang*

Abstract Name: Is Sleep Quality a Factor Influencing Clinical Self-efficacy During Undergraduate Nursing Students' First Clinical Experience?

BACKGROUND: Undergraduate nursing students' first clinical experience is essential because it affects their outlook on their profession. In the existing nursing literature, nursing students have struggled during their first clinical experience which caused some students to leave the profession. Students’ personal health such as sleep quality is noticed to affect their academics and clinical performance. The purpose of this study is to examine undergraduate nursing students’ sleep quality as a factor influencing clinical self-efficacy beliefs during their first clinical experiences.
METHODS: The objective population for this cross-sectional survey was undergraduate nursing students with first clinical experience who were enrolled in clinical courses at three universities. The survey consisted of demographics, sleep quality (Pittsburgh Sleep Quality Index (PSQI) score), and clinical self-efficacy beliefs (Self-Efficacy Clinical Performance (SECP) scale. SPSS software was used to analyze the data with Pearson’s coefficient being calculated to find the correlation between sleep quality and self-efficacy beliefs.
RESULTS: Among the 37 participants, the mean age was 20.92 years and 91.9% were female. Participants reported poor sleep quality (M=7.60±2.831) and high clinical self-efficacy beliefs (M=38.06±9.227) during first-time clinical experiences. Pearson correlation test showed no statistically significant correlation (r = 0.138) between both variables. However, the results of this study showed that 77% of participants reported that they had poor sleep quality during their first clinical experience (PSQI>5). Additionally, the participants reported lower clinical self-efficacy beliefs in the nursing diagnosis (M=6.87±2.178) and evaluation (M=7.17±2.204) stage of the nursing process.
CONCLUSIONS: The study revealed poor sleep quality during undergraduate nursing students' first clinical experience. This evidence should raise nursing educators' awareness of students' personal health and recognize the potential defects of poor sleep quality, Moreover, nursing educators should implement ways for improving students' sleep health and clinical judgment skills during their first clinical experience.

Kaplan, Allen

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cody Mrowicki,
Allen Kaplan,
Evan Schepp,
Rhys Love

Abstract Name: **The Mesoscale Conditions that Contributed to the development of the Morton, Texas Tornado on 23 May 2022**

On 23 May 2022, the participants of UW-Whitewater's Field Course on the Forecasting and Verification of Extreme Weather witnessed a tornado in west Texas. The official tornado report had tornadogenesis occurring at approximately 0007 UTC 24 May 2022 (7:07 pm CST 23 May 2022). Based on synoptic-scale (i.e., large scale) conditions most of west Texas from the US-Mexico border into the Texas panhandle were under the threat of severe weather on this day. While in the field and in the post-mortem analysis of this day it was determined the mesoscale conditions were the main factor as to why a significant tornado occurred in the west Texas region near Morton. Mesoscale conditions were evident during the course's morning weather briefing using various mesoscale forecast models. As the day progressed and conditions changed slightly, adjustments were made by the course participants that allowed them to witness the development of the thunderstorm that would end up producing a dust storm (with straight-line wind gust up to 80 mph) and large hail (1.5 – 2.5 inches in diameter). In the post-mortem analysis, a detailed analysis of the mesoscale conditions was performed with additional data from mesoscale networks around the west Texas region. This post-event analysis did find that a localized area of enhanced shear formed near the Morton area due to a surge of dry air out of eastern New Mexico. Preliminary results show that this surge of dry air interacted with an outflow boundary from the earlier developing thunderstorms. The interaction of these differing boundaries created a small area of enhanced lift and wind shear that allowed one of the on-going thunderstorms to intensify and produce an EF2 tornado that occurred 7 miles north of Morton, which the course participants witnessed.

Kapular, Filip

Institution: *PA - Pennsylvania State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Filip Kapular,
Claude Desplan,
Sergio Cordoba

Abstract Name: **Genetic Control of Lamina Glia Migration in the Drosophila Visual System**

The development of the brain depends on the specification of several cell types, their interactions, and connections. In the optic lobe of the Drosophila visual system, glial cells constitutea significant portion oftotal cells (up to 10%) and play important roles in establishing structure and function. The purpose of this project is to understand the genetic control of lamina glia cell migration in the optic lobe. We have decided to study the roleof known regulators of cell migrationin the context of glial cell migration.Our investigation focused on the Rho family of small GTPases (Rho1, Cdc42, and Rac1).We did not observe a clear reduction of the migratory potential of lamina glia when knocking down Cdc42 and Rac1 activity, however a subtle defect in glia orientation was observed. Knocking down Rho1 activity resulted in the death of our experimental line, therefore a modification of methods should be explored.Furthermore, to understand the genetic regulation of lamina glia migration, we have analyzed scRNA-seq datasets that include lamina glia transcriptomes at different stages of development. As a result, wehave identified a list of genetic markers specific for lamina glia,including promising candidates that can play a role in the process of lamina glia migration.

Karls, Julia

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Megan Schmitz,
Julia Karls,
Brandon Kviz,
Elianna Zimmerman,
Maia Latvala

Abstract Name: "I get physically ill when I think about us?: Making sense of memorable breakup messages

All relationships have a beginning; some have an end. The experiences we have as we disengage from relationships influence our understanding of those relationships. To better understand the memorable messages that individuals received during romantic relationship breakups, we sought to answer the following questions: What is the significance of memorable breakups? Which words or phrases are consistently remembered during a breakup? Do memorable messages usually come from the person breaking up or the person being broken up with? To answer these questions, the research team conducted 16 semi-structured interviews; participants were recruited via convenience sampling. Thematic analysis techniques (Nowell, Norris, White; Moules, 2017) were used to identify the following themes: Many of the reasons for a breakup appealed to an individual's desire for independence as they looked toward the future. Many memorable breakups also had connections with an individual's family or friends' disapproval of the relationship. In general, negative or harmful relationships yielded negative breakup memories while healthy relationships usually yielded more positive or mutual disengagement conversations. As participants reflected on a memorable breakup and pondered future breakup communication they would execute, every individual mentioned something they learned from in their memorable breakup.

Kasparek, Grace

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Theatre and Dance

Author/Contributors:
Shasta Reese

Abstract Name: Shining a Light on Experimental Theatre Practices: A dissection of Neo-Futurism as it is and how it is applied in a modern performance context.

This project seeks to explore the tenets of an experimental style of theatre in a modern performance context while working with passionate students to help expand their means of artistic expression. Neo-Futurism is an active creative force and is continuing to evolve within the theatrical community. I will be basing my project on the work of The Infinite Wrench,a neo-futurist ensemble that is based in Chicago, Illinois. They are an ensemble of writers, directors, and actors that perform thirty plays in sixty minutes, all while following the four basic tenets of neo-futurism: no suspension of disbelief, speed and brevity, scripted and planned, reliance on chance. My goal is to create an ensemble of students at UWEC that mirrors this aesthetic of truthful communication between the audience and the performer. The main research questions I want to explore are 1. What exactlyisfuturism? 2. How did it evolve into neo-futurism? 3. How can we, as writers and performers, apply this specific style in a modern performance context and 4. How does a theatre practitioner develop this style of theatre? My objective for myself and the ensemble is to break out from the robotic tendencies of realism based writing and thinking and creating a new heightened theatrical sensibility. I want the audience to leave with a newfound appreciation for experimental theatre. In addition, I want our plays to evoke a particular atmosphere that challenges the audience to think for themselves. Moreover in executing this project, I want to gain dexterity in performing, writing, and directing within an experimental environment while also developing my skills as a leader amongst fellow creators. Lastly, I would like to develop this material into something suitable for a possible confrence presentation, a poster and/or a short performance at NCUR.

Kassabian, Nicole

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Nicole Kassabian

Abstract Name: Shakespeare and the #MeToo Movement

How have sexual violence and harassment – normalized behaviors in Elizabethan England – aged in a modern climate through literature and performance? Stephen Greenblatt defines “strategic opacity” as key elements left out of Shakespeare’s plays so events can unfold in a particular way. Utilizing his understanding of strategic opacity, I examine how opacity in textual moments – such as the lack of stage directions and ambiguousplot points – influence performance choices through our changing societal views of sexual violence. In tracing how the #MeToo movement has influenced the social climate, I am hoping to better understand how performance choices of Shakespearian plays are received by audiences. This analysis should contribute to filling the literary gap connecting Shakespeare to modern feminism by analyzing texts, performances, and literary discourses.While Shakespeare’s plays often enforce silence upon women who have been wronged, emerging cultural shifts condemning non-consensual sexual behaviors and the #MeToo movement give more powerful voices to victims who wish to share their stories. This cultural shift creates a critical discussion in Shakespearean studies as these plays have carried significance throughout time and are still taught to developing teenagers today. Tracing the variations in performance choices, textual strategic opacity, and audience reactions through a #MeToo lens will illuminate how early modern plays influence the modern societal acceptance of behaviors.

kassim, youser

Institution: *OK - University of Central Oklahoma*

Discipline: Visual Arts/Performance Art

Author/Contributors:
youser m kassim

Abstract Name: Exploring the Suffocating Regimes of Totalitarianism Design

Judging a book by its cover has been a statement that is repeatedly said to avoid the miss lead judgment that could exude the imagery that could be potentially translated into so many interpretations. Judging a book by its cover can devalue the indirect and symbolic meaning of a metaphorical and internal message. In totalitarianism, judging a book by its cover has never been so apparent. Abiding by this traditional principle becomes near impossible due to the pure purpose of totalitarianism design. This direct communication through design has been part of totalitarian regimes. This authoritarian regime has taken over and adopted a fascist ruling over a long list of dictators through the years. Present and past dictators thrived on the use of the totalitarianism design in their campus, warfare, and, most importantly, day-to-day imagery of their people. Most countries and governments have engaged in several totalitarian propaganda and its distinctive art form. Historians have recognized that the most iconic rulers have obtained their positions in the public eye due to the use of visual power as a communicative strategy through poster design. Govern countries and their dictators that inhabited this style in their years of oppression would be Mussolini's rule over Italy, Stalin's communist rule over the Soviet Union, and in recent years, Saddam's domination over Iraq. One can see totalitarianism presented in democracy and other forms of politics. Nevertheless, dictatorship is the only type of political regime that glorifies design, creating vivid totalitarian imagery that leaves a powerful impression.

Katcher, Joshua

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Joshua Katcher *Harry M. Jol* *Zachary Blackert*
Charlie Frey *Paul Hanson* *Clayton Reinier*

Abstract Name: **Stratigraphic Analysis of Paired Vegetated Linear Dunes in the Nebraska Sand Hills Using Ground Penetrating Radar**

There are three models of linear dune formation, and there is no agreement on which theory best explains their formation. The research focuses on the stratigraphy, the internal sediment layering, of the Nebraska Sand Hills' paired linear dunes in north-central Nebraska to determine how the dunes there were formed. Sand dunes are given their shape by wind velocity and sand supply. Therefore, the shape of dunes and the internal layering of sediment within them are indicators of the former wind regimes and dune movements during formation and can be used to determine the correct formation model.
The ground penetrating radar (GPR) data was collected in herringbone-shaped transects centered in the trough between paired linear dunes, extending over the crests. The pattern maximizes the visible internal layering within the dune. Sensors and Software's Pulse EKKO Pro GPR system was used as a non-invasive, high-resolution means of viewing stratigraphy. Topographical data was collected every 2 meters using Topcon RL-H4C laser level. The GPR data was collected using a frequency of 100 MHz antenna frequency, maximizing image depth while maintaining image resolution. The GPR transmitter and receiver were separated 1 meter apart and traces collected every 0.25 meters. The transects varied from 45 meters to 150 meters long. GPS points were plotted at the beginnings and ends of transects to accurately record GPR data locations. Results show some dune stratigraphic layers being superimposed over dune's, which indicates different periods of deposition. This would support a bimodal wind theory over windrift or helical roll vortices theory. The southern dune of the pairs compared to the northern are larger, suggesting two separate formational periods for each dune. Further GPR investigation and Optically Stimulated Luminescence (OSL) dating on sediment cores should be conducted to confirm ages of stratigraphic layers to provide further evidence of our results.

Katsarakes, Eleni

Institution: *CT - Eastern Connecticut State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Eleni Alexandra Katsarakes

Abstract Name: **The Trials of Tinder: The Allocation of Attention and Selection of Dating Profiles**

This study explored how visual attention is allocated within multimodal (textual and visual) profiles, and how its role is modulated by the user's dating goal orientation. Given the serious cognitive limitations on visual processing and short-term working memory, processing the complex and bountiful information provided on dating apps necessitates an efficient and selective allocation of visual attention. Eye tracking coordinates and survey data were used to analyze how the different components of the profile (free-text and photo) draw attentional focus as measured by eye movements, as well as the influence that they have on participant responses. The study proposed that high photo attractiveness and more complex free-text biographies would generate more positive participant responses (right swipes). In addition, it was postulated that an individual's interest in either short-term or long-term dating would alter how they attended to the various components of dating profiles. This study also hypothesized that participants interested in long-term relationships would allocate more attention to the biography section than those interested in only short-term. The visual and textual components both played separate, but complementary, roles in influencing participant responses. Although both were expected to have a positive impact on participant responses (right swipes), the physical attractiveness of the profile photos had a much stronger impact. With millions of users utilizing mobile dating apps every day, the psychological mechanisms underlying dating decision-making have serious implications for the process of finding love on the internet.

Katta, Tapasya

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biology**

Author/Contributors:
Tapasya Katta *John Hartman* *Keshav Singh*

Abstract Name: **Yeast Genetic Screen to Identify Regulators of Numtogenesis**

The process of nuclear mtDNA transposition (NUMT) results in the integration of mitochondrial DNA into the nuclear genome, a phenomenon termed “numtogenesis”, thatis positively correlated with mortality in colorectal cancer. In yeast, the YME1 gene functions as a numtogenesis suppressor, indicating the existence of a gene regulatory network that protects against the transfer of mtDNA into the nucleus. Mutations in thehuman homolog of Yme1 are further implicated in colorectal tumorigenesis and disease progression. Using a NUMT reporter system unique to yeast, we will systematically discover other YME genes that regulate numtogenesis by screening the genomic library of yeast gene deletion strains (YGDS). To do this, a yeast strain has been constructed that is auxotrophic for tryptophan biosynthesis due to deletion of the nuclear TRP1 gene, but contains the gene integrated into the mitochondrial genome. The synthetic genetic array (SGA) method is used to systematically derive all haploid double mutants from the YGDS library, introducing the deletion of nuclear TRP1 and themitochondrial genome with the complementing nuclear TRP1 gene into the deletion strain. Only strains that have undergone NUMT willgrow on media lacking tryptophan, as TRP1 cannot properly be translated from the mitochondrial genome. To identify new YME genes, we will use a high throughput growth curve profiling technology, named quantitative high throughput cell array phenotyping, to measure increased growth on tryptophan dropout media among the double mutant YGDS-derived library. Based on the integration of mitochondrial-encoded TRP1 into thnuclear genome, increased NUMT frequency can be detected. Human homologs of genes that regulate numtogenesis will then be surveyed for their role in cancer, as a proxy for the contribution of numtogenesis to oncogenesis, using bioinformatic (e.g., cancer genomics data analysis) and experimental (e.g., cell line and mouse xenograft models) approaches.

Katz, Lauren

Institution: *GA - Emory University*

Discipline: **English/Linguistics**

Author/Contributors:
Lauren Katz

Abstract Name: **The Female in Frankenstein: Man's Attempt to Abort Femininity**

In her first novel, Frankenstein, Mary Shelley casts the burdens of motherhood and creation onto her male protagonist, Victor Frankenstein. By telling a creation story through the eyes of a male protagonist, Shelley subverts the patriarchal model of narrative form while still speaking to an audience attuned to patriarchal ideologies that might otherwise dismiss the issues if presented from a female voice. Frankenstein’s challenges and obligations after he creates life parallels the absence of control in a woman’s life when she becomes pregnant, and how pregnancy obliges women to a sphere of life that struggles to reach beyond the scope of the home. Depicting Frankenstein’s creation as a monster hyperbolizes the ordinary struggles women go through when they enter motherhood, acknowledging a struggle that went primarily unseen at the time, and still fails to garner public attention today. In a sense, Frankenstein wishes to abort his creation therefore retaining the life he held before. Frankenstein’s desires parallel the plight of women dealing with unwanted pregnancy and, once they have children, are forcefully placed into a life of confinement and domesticity. Through the creation of Frankenstein’s monster, Shelley challenges the expectations of patriarchal society that requires women to risk their lives in childbirth and forfeits their autonomy for a life molded by their creations.

Katzman, Henry

Institution: *MA - Lesley University*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Henry Katzman

Abstract Name: **A Critical Ethnography Of Mad Children**

The 1984 documentary “Children of Darkness” is a primary historical source, that illustrates adolescent carceral mental health care in the era of “mass institutionalization.” This research uses the film “Children of Darkness” to create a speculative ethnography that asserts a framework of symbolic interactionalism to examine the adolescents filmed in “Children of Darkness” self-reported symptomology, staff/ patient ideology, and differing ontologies of “mental illness ” endorsed by the differing staff/patient groups. Further, this research utilizes critical theories of madness and gender to assess the documentarian’s positionality and impress upon the readership that the legacy of mass institutionalization asserts a number of relevant implications to social theory, public health, and social justice.

Kawakita, Tetsuya

Institution: *NY - Manhattan College*

Discipline: Mathematics

Author/Contributors:
Tetsuya Kawakita,
Rehan Mehta

Abstract Name: **Modeling human observer detection for varying data acquisition in undersampled magnetic resonance imaging (MRI)**

Undersampling in the frequency domain (k-space) in magnetic resonance imaging (MRI) accelerates the data acquisition. We used a fixed one-dimensional undersampling factor of 5x where 20% of the k-space lines are collected. The fraction of the low k-space frequencies that are fully sampled were varied from 0% where the primary artifact is aliasing to 20% where the primary artifact is blurring. We conducted a human observer two-alternative forced choice (2-AFC) task with a known signal for each of the acquisitions. In the 2-AFC study, a synthetic signal was placed in the center of one of two anatomical backgrounds of the brain. The observer had to choose which of the two images had the signal. Each of the 4 observers conducted 200 such trails for each experimental condition. In the 2-AFC studies, it was clear that the observers performed better with more low frequencies being fully sampled. In other words, blurring is preferable to aliasing for this task. Our goal is to develop a mathematical model that will predict these experimental results. To achieve this, we modified the three-channel sparse difference of Gaussians model observer (S-DOG). The S-DOG model uses frequency domain channels to model the human visual system. Adding a fourth channel improved our prediction of human performance. Noise models are used to account for uncertainty in human decision making. We implemented an independent noise model, rather than the previously employed proportional noise model. The independent noise model introduces the same uncertainty for all images and the proportional model has noise that depends on the image. The independent noise model more accurately predicted the average human performance. Our future research includes modeling a detection task where the observer needs to search for the signal in the anatomical background and developing a mathematical model to predict the experimental results.

Kazmi, Syed

Institution: *NJ - Rutgers the State University of New Jersey*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Syed Kazmi *Vaishali Jha* *Siddhartha Shibi*
Syed Kazmi

Abstract Name: **Machine Learning to Develop Models for Analyzing Stress in an Academic Environment**

This paper demonstrates the significance of readily available machine learning (ML) platforms like IBM Watson machine where the user can develop ML models to analyze the data and predict the outcome with high accuracy by using various algorithms. This platform provides a great opportunity to new users with limited computing and/or data analysis experience to run a machine learning problem. This is achieved by offering the user an option of automated selection of various algorithms and other relevant parameters (hyper parameter values) under both supervised and unsupervised learning. In the current work, we are analyzing the data collected from an academic institution in Pakistan to evaluate the impact of various parameters on students' average grades by developing ML models on Watson platform. The data was collected right after the COVID peak by distributing a questionnaire among students. The aim was to obtain information on various relevant parameters that were grouped in four sections as "General Information", "Perceived Stress Scale", "Cognitive Assessment", and "Social Dependency". Watson ML platform was used to develop a model under "supervised learning" option and by incorporating various algorithms including Extra Trees Classifier and Random Forest Classifier. The machine proposed two best performing pipelines corresponding to Random Forest Classifier that gave an accuracy of 66.4% (Cross-Validation) in which feature enhancements were performed including hyper parameter Optimization and feature engineering. The paper includes details on various aspects of using ML Watson-platform and the outcome of the ML-model for the analysis of the current data. Results shows that among all impacting parameters, cognitive performance, self-study hours, and number of class absentees played a dominant role in predicting the student's average score. This presentation will describe the questionnaire, statistics, and ML models employed to conduct the study. Suggestions to improve the model's accuracy will also be discussed.

Keen, Tyler

Institution: *CA - Loyola Marymount University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Mike Hennessy *David Kandah* *Hannah Agbayani,*
Kennedy Necoechea *Tyler Keen* *Connor Powers*

Abstract Name: **Spray Integration in the Cooling of High Heat Flux Electronics**

Spray cooling is an efficient cooling technique for high heat flux applications like metal forming and electronic cooling. However, without fundamental knowledge of fluid mechanics in these applications, spray cooling can be ineffective due to dry-out at low spray rates, or excessive liquid accumulation at high spray rates. In electronics like computer chips, these errors can cause crucial and expensive failures. The purpose of this research is to further understand the fluid mechanics and heat transfer processes behind spray cooling, enhance the ability of the process, and develop a phase diagram of collected data. The first technique researched was single droplet impingement. To obtain data, a high-speed camera was used to take detailed videos of microdroplets produced from a piezoelectric nozzle. Microdroplets of various liquids, including ethanol, isobutanol, and isopropanol, were dropped onto a heated copper surface, with the surface temperature ranging from 60 to 200 degrees Celsius. Droplet diameter, velocity, and resident time were tracked, as well as the associated behavior of evaporation, boiling, or leidenfrost, and the rate at which this occurred. These results contribute to the understanding of mechanical properties of microdroplets, discovering which combinations of droplet diameter, velocity, and liquid properties will improve their function in spray cooling. Another aspect researched was the ability of multi-droplet sprays to cool a heated surface via impingement and evaporation. An experimental setup was developed and assembled consisting of a pressurized air and water supply connected to an ultrasonic atomizer nozzle, heated plate, and thermocouples that relayed results to a data acquisition system. Preliminary results determined that cycling nozzle operation yielded similar cooling results to continuous spray, while saving up to 70% of fluid consumed. Future variables to explore include recycling atomized vapor, determining optimal timing of cycles, and testing additional liquids.

Keene, Emily

Institution: ***TX - Texas Woman's University***

Discipline: Biology

Author/Contributors:
Emily Keene *Taylor Hickman* *Dayna Averitt*

Abstract Name: Assessing Pain Behaviors in a Rat Unilateral Anterior Crossbite Model

The current popular animal models used to study temporomandibular pain disorders (TMD) rely on chemicals to develop the disorder, while clinical cases ordinarily result from wear and tear at the joint. The objective for this investigation is to develop and characterize the unilateral anterior crossbite (UAC) model, a more holistic and clinically relevant animal model to study TMD pain as opposed to chemical injections. Characterization of this model will allow for future research that emulates pain in humans.First, we recorded baseline behaviors on a battery of pain behavior tests. We used an electronic von Frey rigid tip to apply pressure and measure mechanical allodynia at the temporomandibular joint and the periorbital region to test for specific TMD and craniofacial pain, a common comorbid symptom. We tested for generalized pain or hyperalgesia with thermal and mechanical hind paw testing. One day after concluding baseline testing we cemented the prosthesis. The UAC prosthesis (n=8) and sham (n=4) were cemented using Metabond quick luting cement according to their protocol. The UAC prosthesis consists of 13 gauge needles, filed down and cemented to the maxillary incisor and 12 gauge needles, filed down, bent at a 130 degree angle, and cemented to the mandibular incisor. The sham crowns were cemented to the incisors, but the mandibular crown was not bent. Behavior testing resumed the following week and was conducted over two days every week for one month.Our results for the UAC model indicate TMD is developing and causing pain. After two weeks there is a sharp increase in mechanical allodynia at the joint. Results were insignificant in testing the periorbital region as well as for thermal and mechanical hyperalgesia in hind paw testing, indicating the model alone is not enough to create widespread pain. Future projects will add stress to testing.

Keis, Sophia

Institution: ***MN - Hamline University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sophia Keis,
Erik Asp

Abstract Name: PATIENTS WITH VENTROMEDIAL PREFRONTAL CORTEX DAMAGE HAVE INCREASED EXPLICIT ETHNIC PREJUDICE

To reduce racially motivated behavior and hate, it is critical to understand the psychological and neurological mechanisms of ethnic tolerance and prejudice. Research has shown that ethnic tolerance requires cognitive effort and executive function resources. One leading hypothesis indicates that to exhibit ethnic tolerance individuals must inhibit unintentionally activated stereotypes and prejudicial thoughts. The ventromedial prefrontal cortex (vmPFC) is critical for executive function and inhibitory control. Moreover, the False Tagging Theory (FTT) argues that the vmPFC is necessary to disbelieve propositions. Early work has shown that damage to the ventromedial prefrontal cortex via stroke or tumor resection increases credulity to information generally. Thus, damage to the vmPFC should decrease inhibitory control and increase general belief in extreme ideas (epistemically suspect ideas that most people doubt or disbelieve), such as ethnic prejudicial beliefs. Here, we examined 72 health individuals, 15 patients with vmPFC brain damage, and 49 patients with brain damage outside the prefrontal cortex (brain damaged comparisons, BDC). These individuals were given the American Ethnic Prejudice Scale (AEPS). In support of the FTT, patients with ventromedial prefrontal cortex damage reported increased ethnic prejudice relative to the BDC group and healthy individuals. This research may offer a neurobiological explanation for the increase in ethnic prejudice during elder aging. Older adults (>65 years old) express greater prejudice (than younger adults) and tend to have structural and functional declines in the vmPFC. This work suggests that education and interventions designed to facilitate vmPFC functioning (such as inhibitory control/executive function) may decrease racism.

Kellampalli, Suhas

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Suhas Kellampalli *Jinbao Liu* *Binoop Mohan*
Shahid Mukhtar

Abstract Name: **Identification of Beneficial Bacteria Associated with Plants Grown Alongside Birmingham Sidewalks**

Urbanization poses adverse conditions for plant growth, as it has been shown that concrete can change the pH and nutrient content of the soil, in turn changing the microbiome composition. Identifying beneficial bacteria in endogenous plants may allow increased crop resiliency in such suboptimal conditions, potentially addressing food insecurity in urban areas. One root and one leaf sample were collected from a single plant found growing on a sidewalk in Birmingham city. Two morphologically different bacterial colonies were selected from both leaf and root spread plates for a final round of streaking, resulting in single colony isolation. Polymerase Chain Reaction (PCR) was performed using 16S rRNA primer sets to yield two leaf bacteria amplicons and one root bacterium amplicon. Samples were sequenced using the Sanger sequencing technique at the Heflin Center for Genomic Sciences at UAB. Two leaf bacteria and one root bacterium were identified using NCBI BLASTN. One of the bacterial colonies isolated from the leaf sample showed a 99.06% sequence similarity to Leifsonia xyli and Leifsonia shinshuensis. L. xyli has been found in the vasculature of Bermuda grass and of corn plants and has previously been genetically engineered to improve plant growth. The second bacterial strain isolated from the leaf sample displayed a 95.24% sequence similarity to an uncultured bacterium, which may potentially be a novel, beneficial microbial strain. Bacteria isolated from the root sample showed 82.52% sequence similarity to Klebsiella pneumoniae, which has been shown to reduce plant susceptibility to nematode infection. The results for the root bacterium are limited by the low sequence similarity. Further plant inoculation studies are required to support a causal relationship between the aforementioned microbes and plant growth.

Kelley, Alexandra

Institution: *UT - Weber State University*

Discipline: Biology

Author/Contributors:
Alexandra Kelley,
Angelina Macwan,
Wanutchaporn Sonsawat

Abstract Name: **Elimination of Multi-Drug Resistant Candida auris Utilizing a CRISPR-Cas9 System**

Candida auris (C. auris) has recently become a cause for concern in healthcare facilities around the world due to its ability to cause severe infections and its resistance to a limited arsenal of antifungals including azoles, amphotericin B, and echinocandins. Utilizing clustered regularly interspaced short palindromic repeats (CRISPR) along with CRISPR associated proteins (Cas) it may be possible to eliminate C. auris without the need to rely on antifungals and can potentially eliminate the resistant fungi. Little research has been done in regard to utilizing CRISPR-Cas mechanisms to abrogate resistance or promote apoptosis in multi-drug resistant yeast such as C. auris. The goal of this research is to identify potential genes necessary for crucial cellular function and development and study the effects of removing or manipulating these genes to see if the changes will lead to elimination of C. auris. To test this hypothesis there will be five groups of C. auris isolates, two control groups and three modified groups that will be plated on selective media and media impregnated with antifungals specific to yeast. The control group will be multi-drug resistant unmodified C. auris while the modified group will be the C. auris altered via a CRISPR-Cas system specifically targeting genes coding for resistance and genes necessary for the organism's survival. Each group will be plated in succession to monitor growth in the presence and absence of antifungals to see if the organism can be eliminated.

Kelley, Kate

Institution: *MN - Hamline University*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Kate Kelley,
Sofía Pacheco-Forés,
Lifeng Dong

Abstract Name: **Human vs. Faunal Bone: Less-destructive Identification using Scanning Electron Microscope**

In the medico-legal field of forensic anthropology, the most common task, and the first step in any case is determining if a suspected bone came from a human. This detail is crucial to get right, if an animal bone is mistaken as human a lot of time and resources can be wasted chasing an unwarranted forensic case, and if a human bone is mistaken for faunal the deceased may never be identified or recovered. On fragments or non-morphologically distinct bone, currently, standard practices for human vs faunal bone fragment differentiation involve cutting a section of the bone sample off or grinding down a sample into powder; both of these techniques include destroying the bone. In our research project, we analyzed various human/non-human bones and bone fragments to determine if we can accurately differentiate between human and faunal(animal) on non-morphologically distinct bone, in a less-destructive way using a Scanning Electron Microscope (SEM). Using a SEM, samples can be directly placed inside the microscope for analysis and do not necessarily need to be thin or severely altered in order to image, thus leading to a less destructive (and often non-destructive) method of bone cell analysis. Less/Non-destructive analytical techniques are beneficial for many reasons; one main reason is that when a sample is destroyed, further analysis of that sample is halted, which means that after the sample is analyzed, no new information can be obtained. This can run a case dry or impede the investigation process. Another reason, and arguably the most important reason, is that as scientists and Forensic Anthropologists we have an ethical duty to maintain the integrity of the remains we are working on out of respect for the individual and their culture/kin.

Kelley, Matthew

Institution: *NC - Western Carolina University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Matthew Kelley

Abstract Name: **Personality and Social Influences on Personal Relationships and Daily Behaviors among University Students**

Social media has become a large network of vast amounts of information. Amongst the many types, misinformation has become an issue of current psychological interest. Misinformation, which isinformation that is made to deliberately deceive people by being untrue or inaccurate, has generated much research into the phenomenon of falling for misinformation, such as the research on emotion, personality, engagement, media presentation, etc. Notwithstanding the past several years of data backed toward this issue and its recent upswing from COVID-19 and the 2020 US Presidental election, more research must be directed towards the individual characteristics of those more likely to be susceptible to fall for misinformation, and the potential influences it can have on those individuals interpersonal lives. The present research focuses on the two previousfactors by investigatingreligious fundamentalism, personality, and interpersonal competenceas predictor variables to explore the psychosocial impact that misinformation has made since the COVID-19 Pandemic.To measure the previous constructs, this study uses the Religious Fundamentalism scale, M5-50 Personality Assessment, and the Interpersonal Competence Questionnaire to measure personal characteristics. Then to measure misinformation susceptibility, this study uses the Susceptibility to (Mis)information Scale (SIS), which categorizes participants into one of four phenotypic types of individuals susceptible to information ormisinformation: Consumers, Doubters, Knowers, and Duffers, respectively. By collecting data through this means, the current study usesa multiple-regression model to explore the relationshipsbetween exposure to (Mis)information and how people perceive their personalrelationshipsto better understand howinformation on social media and psychosocial factorsimpacts their lives. Additionally, this researchaims to learn more about what personal characteristics are more likely to accept misinformation on social media.

Kellogg, Alexis

Institution: ***CA - Irvine Valley College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel Ongoing Investigation

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Kelly, Marina

Institution: ***WI - University of Wisconsin-Madison***

Discipline: FAN Abstract

Author/Contributors:
Marina Kelly *Hannah Bailey* *Mae Edwards*
Shilpa Maddikunta *Shannon Carnahan* *Ashton Jenks*
Gráinne McDonagh *Isa Butz*

Abstract Name: Serious Play: Near-Peer Mentorship in UW-Madison's Undergraduate Research Scholars (URS) Program

Over the past 25 years, the Undergraduate Research Scholars (URS) program has successfully supported early undergraduate students, many of whom academic institutions have historically marginalized, in rich research and creative practice placements across campus. The URS program includes two key components: 1) partnerships between undergraduate students (Scholars) and campus researchers & artists (Mentors) and 2) a seminar-based, interdisciplinary learning community that centers near-peer mentorship by upper-level undergraduate researchers and artists (Fellows).
In this session, you will join current URS Research Fellows in an exploration of what we know about peer-leadership and mentorship within an undergraduate research program and its impact on both the peer mentors and the students they support. Fellows will share their approaches to building Scholars' resilience and sense of belonging at a Predominantly White Institution (PWI). Fellows will also reflect on pedagogical and practical strategies that contributed to their development. This includes the program's ideological framework of interdisciplinary "serious play" and intellectual emancipation, the student-led curriculum development process, and the model of academic and administrative support that makes their work possible.
Near-peer mentorship is a core element of the URS program. It is this near-peer component that is so often missing from other undergraduate research experiences in higher education. Research indicates that students' sense of belonging is enhanced by exactly this kind of mentorship, and this is especially true for students from historically underrepresented groups. In this way, URS offers a unique contribution to the landscape of belonging efforts on college campuses as well as undergraduate research participation. We hope this panel discussion will help faculty members and administrators understand how comprehensive near-peer mentorship can enrich undergraduate scholarship, especially for students from historically underrepresented groups.

Kelly, Shayla

Institution: ***SD - University of South Dakota***

Discipline: Biology

Author/Contributors:
Shayla Kelly,
Danielle Galvin

Abstract Name: Evaluating the Effect of Drought Conditions on Foraging Activities in Northern Leopard Frogs (Rana Pipiens)

Drought is one of the biggest ecological dangers facing the Midwest. With wetlands being lost to both agriculture and climate change, organisms who rely on them are decreasing at alarming rates. Northern Leopard Frogs (Rana pipiens) are a species that historically has thrived across the Midwest and are now seeing drops in numbers. As average temperatures increase and precipitation decreases, wetlands can't keep up with these new demands. To understand how drought is affecting Northern Leopard Frogs and their behavior we looked at how these stressors change their foraging behavior. Tadpoles were collected from wetlands across eastern south Dakota during summer 2022. These tadpoles were raised in the lab until Gosner stage 26 and from there randomly assigned to a drought group. Trail groups included control (0%), low (40%), high (70%), and extreme (90%) loss of water. Water levels were lowered at a consistent rate each week, over an 8-week period. Two trail blocks were created with a one week difference. As tadpoles, algae pellets were used for foraging trials and as adults, meal worms or crickets were used. Foraging trials lasted 15 minutes as tadpoles and 10 minutes as adults with an observer taking notes. The reason for observing foraging behavior is to understand if there is a positive relationship of drought as a stressor and consumption of more food. Mass, length, weight and Gosner stage of each individual were taken each week throughout the entirety of the experiment period. Preliminary results suggests no significant change in feeding behavior or consumption of food based on water loss. However, results do show a positive correlation to timing of metamorphosis and body size.

Kelly-Miller, Fiona

Institution: ***WI - Marquette University***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Fiona Kelly-Miller

Abstract Name: Decolonizing Honor Killings

In this article, I compare the cultural manifestations of violence against women in Palestine through honor killings and in the United States through crimes of passion. This article provides a comparative study of the current laws that mitigate both the nature and punishment of the crime of gender violence in Palestine and the U.S. Using historical perspectives, current U.S. criminal statutes, and Palestinian legal codes. I examine the connections between honor killings and crimes of passion, including comparisons between legal concepts, case studies, and Ancient Roman societal norms influence on gender violence. By analyzing recent cases since the 1990s, I suggest that these crimes, while culturally, historically, and geographically distanced from one another, share universal patriarchal values that socially normalize violence against women, as demonstrated in both criminal justice systems. Past and current quantitative and qualitative trends are utilized to develop recommendations on decreasing the frequency of the rate of violence against women by identifying cultural norms that maintain patriarchal systems of repression and making policy recommendations to criminal justice laws on honor killings and crimes of passion.

Kelzer, Charles

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Charles Kelzer *Sahana Chowlur* *Rishit Agrawal,*
Sohail Zaidi *Vimal Visvanathan*

Abstract Name: **Characterizing an Exoskeleton Device for Leg Muscles Rehabilitation**

Stroke patients very often suffer from disability and are unable to walk freely. To regain their mobility, they need rehabilitation exercises. Commercial exoskeleton devices are availble but these are either very expensive or do not fulfil the patient's particular exercise requirements. An ongoing project at the San Jose State university is engaged in designing and developing an exoskeleton knee brace that will be cheap and will be user friendly [IMECE 2020, 2021, 2022, SCCUR-2022]. This knee brace relies on the fluidic muscles (Festo Corp) that use air pressure to mimic the leg muscles movement. The device consists of two parts, an upper brace for the front of the thigh holding the fluidic muscles and a lower brace behind the calf. The operating system includes a central control box that contains multiple solenoids and valves that are controlled by a central microprocessor (Arduino). The central system was activated by EEG sensors that were mounted on a human leg to activate the exoskeleton device. The EEG sensors' response was further processed for the noise reduction and was amplified by using an amplifier. Five fluidic muscles were characterized and calibrated before mounting them on a mannequin leg. Further experiments helped to optimize the knee brace design to mount it on a human leg. Experiments were performed to characterize the device operation by measuring the average leg rotation time and the maximum rotation angle as a function of applied pressure. Experiments show that the average time to reach the maximum rotation angle varied from 18 to 36 degrees where the rotation time varied from 1.58 to 1.23 seconds as the pressure increased from 30 to 60 psi. The presentation will detail the design and the operation of the exoskeleton device and will also describe the experimental results in a greater detail.

Kemether, Cecilia

Institution: *PA - Susquehanna University*

Discipline: **Biology**

Author/Contributors:
Cecilia Kemether,
David Matlaga

Abstract Name: **Effect of Neighborhood Densities on Fruit Removal and Frugivore Interaction with Pokeweed**

The density of neighborhood densities of pokeweed between frugivore interactions has not been tested before. A neighborhood is defined as a pokeweed plant with another pokeweed plant within close range. Pokeweed either grow is clusters or in isolation. These types of neighborhood densities can be a factor for the interactions between frugivore and the species. Clustered plants are known to have more berries on their racemes, which might be a reason for why frugivore will target these clustered plants more favorably than isolated plants. It was hypothesized that clustered plants will have a higher interaction rate with frugivore and a higher berry consumption rate throughout time when compared to pokeweed plants of isolation. There were cameras placed at ten clustered and ten isolated pokeweed plants throughout September 2022 to February 2023 to document the number of frugivore interactions with the plants. Clustered plants were plants that had other plants within five meters of it, and the isolated plants were plants with no other plant within five meters of it. The average contact duration recorded for clustered and isolated plants were tested throughout time. Also, there were three racemes on the 20 pokeweed plants being recorded to document the number of fruits being removed on the different types of pokeweed plants. There were four categories of berries when recording the berry consumption: unripe, ripe, missing, and shriveled. The percentage of fruits removed on both isolated and clustered plants was documented throughout time. The isolated plants did not have many berries removed from their racemes as compared to the clustered plants. The clustered plants also had a higher percentage of frugivore interactions throughout time when compared to the isolated plants.

Kemp, Alyssa

Institution: *PA - Drexel University*

Discipline: Environmental Studies

Author/Contributors:
Alyssa Kemp

Abstract Name: **A Community-Focused Analysis of the Heat Mitigation Techniques in Hunting Park, Philadelphia**

Along with rising temperatures, the number of days over 90 degrees is rising in Philadelphia, Pennsylvania. Historically, Philadelphia averaged 21 days at 90 degrees or higher yearly; however, July 2020 recorded 21 days in the nineties. Projections show Philadelphia will double the number of 90-degree days by 2030. Increasing heat unequally impacts low-income communities and communities of color. The Hunting Park neighborhood of mostly Hispanic and Black residents records surface temperatures more than 22 degrees hotter than greener areas in the city. The inequitable heat leads to an increase in health risks in the neighborhood. Drexel University, the Philadelphia Office of Sustainability, and the non-profit Esperanza, funded by the William Penn Foundation, collaborated to install cooling structures of umbrellas and planter boxes in the neighborhood to combat heat. This study initiates the quantitative analysis needed to examine the effectiveness of the cooling structures. Comparisons of temperatures between blocks in the focus neighborhood analyzed the capability of the cooling structures to reduce the overall heat. With help from Civic Scientists, the localization of urban heat islands was determined to help assess areas within Hunting Park with an increase in heat disparity, so that future cooling structures can be implemented more strategically.

Kempken, Hannah

Institution: *PA - Juniata College*

Discipline: Communication/Journalism

Author/Contributors:
Hannah Kempken

Abstract Name: **Populist rhetoric that overshadows journalistic objectivity: Fox News ideological influence in the start of Covid-19**

Using two Fox News newscasts from the spring of 2020, this thesis examines their presentation of the start of Covid-19. Using Cluster Agon Analysis, the ideological assumptions of Fox News are examined as they are revealed through their language choice. This strategy analyzes rhetoric by extracting key terms that are frequently used, clearly described, or used in multiple contexts and thus can be associated with other terms to reveal the motive of Fox News. It is further discussed to what extent the rhetoric creates identification and divisions with the audience during the start of Covid-19. Furthermore, Fox News journalistic responsibility and its function as a Fourth Estate are discussed by showing their journalistic methods.This rhetorical study assesses the influence of Fox News on their audienceregarding the perception of Covid-19 facts; their objectivity in journalism and their subsequent influence. Cluster Agon and Ideological Analysis are used to argue for the hypothesis that Fox News presents Covid-19 facts in a populist biased manner and does not represent journalistic objectivity. Populism here means that Fox news creates clear images of identity during the start of Covid-19, where they define themselves and their listeners by distinguishing themselves in opposition to supposed political enemies. Fox News also discusses the responsibility for Covid-19, although this has not yet been scientifically explained at the time. Finally, a comparison is made with scientific facts about the start of Covid-19 and the strategies of Fox News to manipulate by rhetorical means and framing the presentation of alternative or false facts.

Kempkes, Jenova

Institution: ***AR - University of Arkansas***

Discipline: Psychology/Neuroscience

Author/Contributors:
Jenova Kempkes

Abstract Name: Impact of Biological Sex on Cognitive Decline in Healthy Older Adults: A Cross-sectional Study

Alzheimer's disease is a growing problem both in the United States and in Arkansas specifically. As the populaton ages, the disease is becoming more prevalent which is creating a strain on the economy and producing an increased demand for caretakers. In order to prevent and manage the disease it is important to understand what risk factors are associated with Alzheimer's. One factor under investigation is the impact of biological sex on cognitive decline. Studies have shown a wide variety of results which can lead to confusion and prevent the improvement of medical care. If there is a difference between males and females, early detection and intervention techniques can be modified to more accurately address cognitive deficits. This study used a cross-sectional design to determine if there was a difference in cognitive function between individuals of each sex spanning the ages of 45-75. The study used a total of 31 male-female pairs that were matched based on age and total ANU-ADRI score. Differences were determined based on 12 individual cognitive assessments within the RBANS test that span five different cognitive constructs. Analysis was performed using a two-by-five mixed factorial ANOVA with pairwise comparisons to detect biological sex and age cohort subgroup differences. Of the twelve assessments, eight displayed no significance in age or sex. Picture naming, list recall, and story recall had a sex-pooled effect for age cohort. The coding and list recall assessments had an age-pooled main effect for sex, but there was no further interaction between age and sex.

Kendrick, Emily

Institution: ***CA - University of California - Merced***

Discipline: Psychology/Neuroscience

Author/Contributors:
Emily Kendrick,
Rose Scott

Abstract Name: Does parent education affect children's discussion of their thoughts and feelings?

Research suggests that hearing and using mental-state talk – words that refer to thoughts, wants, and feelings – is important for the development of children's understanding of others' thoughts, feelings, and relationships. Due to its high influence, it is important to understand the factors that influence this talk. Prior research studies have shown that parental stress and socioeconomic status (SES) is related to parents' mental state talk, but there is a lack of research regarding how these factors influence children's mental-state talk. This study examines the question, do parental stress and SES impact children's mental-state talk and understanding? This study used pre-existing videos of parent-child interactions as well as data regarding parental stress and SES. In these videos, the parent and the child (3.5- to 5.5-year-olds) look at a wordless picture book designed to elicit talk about mental states. We coded how frequently children used mental-state terms, what type of mental-state term they used (cognition, desire, emotion), whose mental state they referenced, as well as whether it was a statement or a question. Our results showed that higher educated parents produced children that use more cognition terms. This is important because more cognition terms implicate a higher social cognition skill. In addition, both the parents and the children referred to the child's mental state more. What these results are showing us is that higher-educated parents are going beyond what the picture book shows and they are relating it to their child's own experiences and feelings. These findings are significant in the further understanding of children's social-cognitive development and their reliance on a beneficial parental input.

Kendrick-Dickerson, Shailyn

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
KC Morgan,
Dayja Palma,
Shailyn Kendrick-Dickerson,
Tania Reeves

Abstract Name: **Sustainability of Resources for College Food Pantries**

Over 40% of college students are food insecure. Students in need are 43% more likely to fall behind in classwork and drop out of college. Students with food insecurity are also more likely to develop severe mental health conditions like depression, anxiety, low self-esteem, and loneliness. This study seeks to explain what factors contribute to sustainability of resources in university food pantries. The purpose of sustainability research is to find new and efficient ways to meet the needs of students who are food insecure in college. The student researchers explore the issue of sustainability of resources within college settings and how it impacts the resources obtained by grants and donors. The student researchers developed the following question: What are the factors involved in the sustainability of resources within college food pantries? The student researchers used 16 scholarly journal articles to inform their research on the factors that contribute to the long-term sustainability of food pantries in institutions of higher learning. Researchers using purposive and snowball sampling to identify a minimum of 100 participants with the help of the public directories to complete the questionnaire.The student researchers identified three common concepts within articles: factors of sustainability of food pantries, barriers and obstacles to successful food pantry use, and pantry development. The information gathered from the articles assisted the student researchers in question development for their survey.This research aims to identify the factors in sustaining a college food pantry through increased use. This information is important in attaining the researchers' overall goal of aiding the Tarleton Purple Pantry in developing a plan to sustain resources through Tarleton State College's rapid growth in enrollment.

Kenkpen, Angel

Institution: *MN - Bemidji State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Angel Kenkpen

Abstract Name: **Biochemical and Biophysical Analysis of LINC00298, A Non-protein Coding RNA Gene That When Expressed, Causes Early Onset Alzheimer's Disease**

Early onset Alzheimer's disease is a form of progressive dementia that affects people under the age of 65. There are several causative factors ranging from genetic to environmental, this study focuses on one of the genetic factors. LINC00298 RNA gene has consistently been expressed in patients of Early Onset Alzheimer's disease, as such, the goal of this study is to determine the binding partners of the LINC00298 RNA gene. LINCOO298 forms secondary and tertiary structural elements when bound to Mg2+. Biophysical analysis carried out using gel mobility shift assays confirmed this. When bound to Mg2+, LINC00298 forms a more compact helical structure as compared to Apo LINC00298 when run. Affinity chromatography was used to biochemically identify the binding partners of LINC00298 by using lysate from the hippocampal neuronal cells of mice. Mass spectrometry was consequently used for further analysis and identified the binding partners of LINC00298 to be the 40s and 60s ribosomal proteins in the neurons of mouse hippocampus cells.

Kennerly, Kylee

Institution: *VA - George Mason University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kylee Kennerly

Abstract Name: **Attitudes on Loneliness and Technology as an Intervention in University Students**

Across the world, loneliness has been increasing in the populations, with young adults within the university population, ages 18-24, experiencing the greatest rises in the amount of lonely individuals and amount of loneliness experienced by these individuals. These experiences can be due to risk factors such as social minority statuses, social transition, increased responsibility, and perceived or real isolation from peers. Social technologies, in the form of artificial agents, may be capable of aiding young adults in managing their feelings of loneliness. The purpose of this study is to evaluate the perceptions of loneliness through an extensive overview of the collegiate population. Within this study, I seek to identify the individuals most vulnerable to chronic loneliness, decipher the associated outcomes, and determine if technological services could serve as a viable method of intervention for some or all populations.
The study will be conducted through a survey with university students. Within the study, I hypothesize that 1) Population will exhibit significant amounts of loneliness in the amount of lonely individuals and in how lonely the individuals are, 2) Individuals in societally minoritized groups (racial minorities, sexuality and gender minorities, disabled individuals, etc.) will exhibit greater amounts of loneliness than that of their societally majority peers, 3) Individuals with greater amounts of loneliness will endorse maladaptive coping skills more often than individuals with lower amounts of loneliness, and 4) Individuals with greater amounts of loneliness will rate interventions involving technology more highly than those with lower amounts of loneliness.

Kersting, Claudia

Institution: *FL - Florida Gulf Coast University*

Discipline: Nursing/Health Science

Author/Contributors:
Claudia Kersting

Abstract Name: **Idiopathic Facial Aseptic Granuloma: a Case Report and Review of a Developing Pediatric Entity**

Idiopathic facial aseptic granuloma (IFAG) is a rare, anomalous pediatric entity characterized by asymptomatic erythematous nodules that are primarily located on the eyelids or cheeks. The infrequency in which it is encountered makes it an arduous diagnostic challenge. We describe the rare presentation of a 3-year-old male who was referred to the dermatology clinic with an asymptomatic facial nodule that had been present on the right zygoma for 3 months. The patient was diagnosed with idiopathic facial aseptic granuloma, based on clinical reasonings. Treatment was initiated with topical corticosteroids and topical calcineurin inhibitors. After 8 weeks of treatment, the patient showed marked improvement. The objective of this case report is to highlight the clinical aspects of this atypical entity to avoid the inaccurate diagnosis and raise awareness for the management of this condition, for which we propose a novel treatment combination of topical corticosteroids and topical calcineurin inhibitors.

Keshavagari, Vignan

Institution: *CA - University of California - Riverside*

Discipline: Computer Science/Information Systems

Author/Contributors:
Vignan Keshavagari *Ruthvik Singireddy* *Farwa Kazmi*

Abstract Name: **AI Modelling for the Impact and Contribution of Various Factors on Heart Attack Casualties**

Previous studies reveal that many prevailing health indicators/variables can play a significant role in heart attack-based causalities. These variables include blood pressure, age, anemia, smoking, serum sodium, ejection fraction, serum creatinine, platelets, diabetes, and creatinine phosphokinase. With the increasing computational power, it is now possible to use different algorithms to develop a predictive model that will take the input data related to various factors to predict the outcome in term of survival or death of the patients. Developing these models is time consuming task that may take a lot of effort and resources. This can be eased by using machine learning tools that be able to develop a predictive model by incorporating multiple algorithms for an optimized solution predicting the final outcome with a high accuracy. In the
current work, an open-source data from Kaggle was obtained that incorporated multiple variables for 300 patients including the final outcome for these patients [https://www.kaggle.com/datasets/heart-failure-clinical-data]. We used IBM Watson platform to conduct this study. IBM machine model first analyzed each variable by conducting a statistical analysis on each variable. Then it used random Forest Classifier and LGBM Classifier with and without multiple enhancements including HPO-1/HPO-2/FE. The developed model can predict the outcome with an accuracy of 86.6%. Important variables
contributing to the outcome predicted by LGBM forest included platelets-76%, Ejection Fraction-58%, Creatine Phosphokinase-52%, Serum Creatine-49%, Serum Sodium-34%, and Age-27%. On the other hand, the corresponding variables contribution predicted by the Random Forest included serum creatinine-50%, ejection fraction-30%, creatinine phosphokinase-25%, age-19.00%, and platelets-18%. This presentation will highlight the
medical implications for selected variables contributions and will provide information on various algorithms' pros and cons along with the confusion matrix, ROC curves, and summary effects predicted in this study.

Kessie, Ethan

Institution: *GA - Kennesaw State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Matthew Woodbine *Spencer Cline* *Ethan Kessie*
Ayse Tekes

Abstract Name: **Modeling and Simulation of Compliant Mechanisms in MATLAB Simscape**

Compliant mechanisms are the mechanisms that transfer the input force, displacement, or torque from one point to another through the deformation of its compliant members and flexible body rather than the joints such as ball bearings. They have superiorities over the traditionally designed mechanisms such that since they can be designed and manufactured as a single piece using injection molding or additive manufacturing, they are light weighted, and no need for assembly and have no friction loss. Thus, the compliant mechanisms have better performance and accuracy and find application areas in the design of locomotive robots, grippers, medical robots, and microelectromechanical (MEMs) devices. Despite all the advantages, deriving the mathematical model of compliant mechanisms is much more challenging compared to traditional rigid body mechanisms as the complexity of the design increases. Although there are several methods available to find the load-deflection curves of flexible members such as pseudo rigid body modeling (PRBM) and the first and second of the Elliptica theory, they are limited to the simple geometries including fixed-free, fixed-guided, and fixed-fixed buckling beams. In this study, we present the design, modeling, and simulation of several compliant mechanisms in MATLAB Simscape. We adopted two approaches: the model can be created using the Simulink library blocks or by importing the cad model and then introducing the flexibility using discrete beam elements. We created the models of a fully compliant five-bar mechanism including 4 rigid bars connected by large deflecting flexure hinges, a compliant dwell mechanism incorporating buckling beams, a slider, and a rail, and a compliant bistable mechanism consisting of 6 rigid bars, a slider, and fixed-free flexible beams. The Simscape models not only provide kinematic insight but also visualizes the displacement and motion of each mechanism in the mechanics explorer.

Kester, Gwen

Institution: ***PA - Moravian University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Gwen Kester,
Sarah Johnson

Abstract Name: Stereotypes of "Research"

Research on the term “research” and the stereotypes it holds in academia is limited. Subjectively, scholars in the arts and humanities use different terminology to describe their studies (scholarship, creative endeavors, etc.), often leading to a lack of participation in programs/events labeled as “research.” In the current study, a survey examining how professors of varying nationalities identify with the term “research” depending on their discipline was distributed utilizing academic webpages and faculty email lists. Questions on the survey included demographics, preferred terminology for disciplinary work, individual and department-based identities with the term “research” and rating various scenarios based on how well they coincide with “research.” Some of the scenarios included were scenarios involving a musician doing transcribing work versus a biologist studying cancer cells. Based on preliminary results, the arts are associated the least with the term “research” while the natural sciences are associated most strongly with this term. However, on a scale out of 6, the social sciences tend to associate both their field and themselves most strongly with the term (5.43), while the natural sciences (5.20) lie closer to the humanities (5.13). Interestingly, all disciplines scored relatively high on this scale, pointing towards some form of identification with “research” among all fields. However, these findings indicate the humanities identify less with the and appear to prefer the terminology “scholarship.” Ironically, the natural sciences scored relatively low in personal identification, but scored the highest in regards to their scenarios (2.95 oout of 3). Further analyses will be conducted, including qualitative sorting of responses to open ended questions from the survey. The results of this project will allow adaptation of research programs/offices to better include these underrepresented fields, bridging the gap between disciplines by incorporating different terminology and expanding project requirements to better accommodate nontraditional projects.

Keys, Taylor

Institution: ***OK - University of Central Oklahoma***

Discipline: Art/Music History

Author/Contributors:
Taylor Keys

Abstract Name: The Evolution of Ancient Egyptian Hieroglyphics and Their Impact on Design

Ancient Egyptian hieroglyphics are a complex writing system that was used in burial and funerary practices, as well as to honor the ancient Egyptian gods and goddesses. As the writing system developed over time it evolved to include three main types of symbols. These symbols are pictograms, signs that mean exactly what they represent, phonograms, signs that represent sounds, and ideograms, signs that represent broader, more complex and, sometimes abstract concepts. Hieroglyphics can be seen most commonly in ancient Egyptian society in temples, tombs, or in other religiously significant works such as the book of the dead. Their impact on design is seen even in modern society today such as with things like public restroom signs and emojis.

Khaled, Jehan

Institution: *WI - Marquette University*

Discipline: Biology

Author/Contributors:
Jehan Khaled,
Krassimira Hristova,
Kyle Leistikow

Abstract Name: **Longterm exposure to Bacillus subtilis 6D1 CFE negatively impacts Staphylococcus aureus fitness in planktonic and biofilm competitions**

Antibiotics have helped reduce bacterial infections since the creation of penicillin in 1929. However, biofilm is a self-adhering community of bacterial cells enveloped in a self secreted extracellular matrix, serving as additional protection from certain antimicrobial treatments, like antibiotics. As antimicrobials are unable to penetrate the matrix, the bacteria can develop a resistance, survive and persist in a variety of environments. It has become important to find alternatives to eliminate biofilms and reduce antibiotic resistance. In previous work done in our lab, cell free extract (CFE) of Bacillus subtilis 6D1 was shown to break down the biofilm of Staphylococcus aureus ATCC 29213. However, it is unknown how long-term exposure to B. subtilis 6D1 CFE drives S. aureus ATCC 29213 evolution and subsequent fitness. For this reason we subjected S. aureus ATCC 29213 to different treatment lifestyles for 11 days (80 generations) (Table 1). To test how B. subtilis 6D1 CFE affects S. aureus evolution, we evolved the S. aureus ATCC 29213 with and without it, in both a planktonic(free swimming)and biofilm enviroment. After, the evolved strains ofS. aureus were subjected to competitions withB. subtilisin both aplanktonic and biofilm environment to test for long-term effects of CFE onS. aureus. Our results suggest, that S. aureus populations evolved in the presence of B. subtilis 6D1 CFE were less fit against B. subtilis in both a planktonic and biofilm environment, suggesting long term exposure to CFE decreases the ability of S. aureus to produce biofilm.

Khosroabadi, Delyar

Institution: *CA - California State University - Channel Islands*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Aleksya Drobshoff *Delyar Khosroabadi* *Ahmed Awad*
Justine Garcia *Steve Carrillo*

Abstract Name: **In Silico studies and Synthesis of Modified Nucleoside Analogues for Pancreatic Cancer Therapeutics.**

Pancreatic ductal adenocarcinoma (PDAC), the most prevalent type of pancreatic cancer with a high mortality rate due to a lack of early detection techniques, leading to diagnosis at a terminal stage and limiting treatment options. The nucleoside analogue Gemcitabine, while the most effective chemotherapeutic, faces drug resistance that hinders its therapeutic potential. We propose nucleoside analogues that feature a polyethylene glycol amino (PEGA) modification. This modification reduces the hydrophilic nature of the drug. The PEGA group is also hypothesized to serve as a chelating agent for both zinc and iron ions required for RNR activity. We have done computational studies including molecular docking using the internal coordinate mechanics algorithm (ICM), SWISS Absorption, Distribution, Metabolism and Excretion (SWISSADME), and prediction of activity spectra for substance (PASS), utilizing way2drug online application. We have also begun synthesizing the intended compound and plan on performing biological and enzymatic assays afterward.The edock scores, the root mean square deviation (RMSD), and the H-bonding formation were analyzed on ICM. Edock scores showed a higher binding affinity than gemcitabine, with an average value of -48.52 KJ/mol and an average RMSD value of 2.69. The PEGA moiety indicated a strong binding affinity to a known substrate binding residues in the catalytic sites such as amino acid Asn211, a vital component to the catalytic processes. The pharmacokinetics and toxicity were assessed through SWISSADME which demonstrated excellent solubility scores of logS -0.37 and showed non-toxic interactions to CYP isoenzymes. Through PASS prediction, the biological activity of the compound showed high potential as an RNR inhibitor with a probability of activity (Pa) to probability of inactivity (Pi) of 0.174 to 0.011. In conclusion, the proposed analogues demonstrated improved target inhibitions making them strong candidates for further investigation via in vivo and in vitro studies.

Khot, Sarah

Institution: *AR - University of Arkansas*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sarah Khot *Grant Shields*

Abstract Name: **The Relation Between Prenatal Stressor Exposure and Autoimmune Disorder Risk**

Stress is ubiquitous in daily life and has been linked to detrimental effects on both physical and mental health. Countless studies have been conducted to evaluate the impact of acute and chronic stressors on the incidence of depression, anxiety, cardiovasculardisease, and autoimmune disorders. Cumulative stressful experiences are thought to lead to deterioration on physiological systems via a process known as allostatic load. Over a period of time, this can increase the risk for diseases. Similar to the way stressors impact health, there is evidence that suggests that stressors experiencedby one's mother during pregnancy can influencethe offspring's health in adulthood. Prenatal stressors confer maternal immune activation, which is also linked to negative health outcomes in offspring. Although links between prenatal stress and general health of offspring are relatively well researched, the relation between acute prenatal stress and autoimmune disorder diagnoses in offspring is less established. The current study analyzed relations among self-reported measures of prenatal stressor exposure, demographic factors, and both autoimmune and general health diagnoses. Prenatal exposure was measured using the Stress and Adversity Inventory for Adults (STRAIN), and stress-related health diagnoses (both non-autoimmune and autoimmune health disorders) were recorded using diagnoses by medical professionals. A poisson generalized linear model was usedto evaluate the results, while controlling for covariates. It was found that prenatal stressor exposure was correlated with more general health issues and autoimmune disorders, and that this association held despite controlling for relevant covariates of age, sex, race/ethnicity, sex, socioeconomic status, negative affect, and social desirability. Further analyses were done for each individual diagnosis to determine significant relationships. These results provide an insight into the dynamics underlying stress in relation to disease risk and sets the framework for further research into the specific mechanism of autoimmune disease risk.

Kidd, Sadee

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Environmental Studies

Author/Contributors:
Sadee Kidd

Abstract Name: **Evaluating Conditions for Implementing Urban Ecology Centers in New Communities**

Milwaukee's Urban Ecology Center (UEC) is a non-profit organization that is founded on urban environmental education, community building, neighborhood renewal, and land restoration. The ability to cultivate such an immersive connection between nature and society has caught the attention of leaders and change-makers in cities around the nation. Directors of non-profit organizations, administrators of municipal programs, and educators at all levels have reached out to the UEC with the aspiration to develop their own version of an urban ecology center to prompt positive change in their community. Research in this study is focused on identifying demographic commonalties between cities across the U.S. that can help to foster the relationship between urban living and connection to the natural world through the development of UEC-based programming. A crucial factor in the development and success of an urban ecology center is its location, with the goal to optimize conditions that bring a community together. The key data for finding a best-fit location is formulated by considering the overall city population, the school density, and additional geographic features. Community organizations with aligned missions serve as potential partners, which can also be a consideration in determining the best site for a UEC. Data for this study is gathered from publicly available records, then organized into a database allowing for comparative analysis and to recognize trends in cities. Using GIS software, the collected data is converted to a digital map which aids in identifying a best-fit location relative to the number of parks and the school density found within a specified distance buffer. The goal of the research is to establish a guide to creating deeper relationships for initiating urban ecology center programming in any city.

Kidd-Brown, Tami

Institution: ***IL - North Central College***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Kaitlin Kirsch

Abstract Name: NCUR Murals Project (Collaborative Artistic Project)

I am a studio artist, with a focus on painting, inspired by both the natural world around me and the man made issues of our society. My painting style is one I like to call fantastical surrealism, where I startby just putting a few blocked colors on the canvas then build up layers and layers of detail through techniques like dry brushing and stippling. I have painted on a variety of materials such as canvas, wood, and fiberglass.I have also used other mediums such as sculpture and assemblages to hit on issues such as women's rights, censorship, and societal controls. Based on this I would be interested in the Equity/Diversity/Social Justice theme. Recently I was a part of another collaboritave paintingproject for the community, the Downtown Naperville Alliance Truck Project. For this project two other artistsand I painted a sculpture of a truck with a retro theme. The project took place over the course of two weeks andwas commissioned by a local business, whowe worked directly withto develop and finalize our design. While I go to school in Illinois, I am from the Greater Orlando area. I have been involved in multiple exhibitions in galleries both in Illinoisand Florida.

Kidwell, Claire

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Claire Kidwell *Clara Gland* *Bryn Stewart*
Cade Shipman *Emily Kerr* *Grace Thompson*
Rebecca Sheetz *Megan Gawlitta* *David Leland*

Abstract Name: Smartphones, Attention, and Brain Electrical Responses

Given concerns about how distracting smartphones can be, we are interested in how they affect attention-related brain electrical activity. Previous research suggests that the mere presence of one's smartphone can negatively impact behavioral performance on an attention-related task. The aim of our ongoing study is to investigate whether simply having one's smartphone present and visible (although shut off) influences attention-related EEG (electroencephalographic) activity. We are assessing this in two ways. First, subjects perform an oddball task, which requires attention and responses to occasional target stimuli ("oddballs") among many task-irrelevant stimuli ("standards"). The P3, a late component of the event-related potential (ERP), is typically larger to oddballs (which receive more attention) than standards; we predict an attenuation of this oddball effect in the presence of one's phone versus a control non-phone object (tile). Second, we are looking at EEG power in the beta range (13-30 Hz) as subjects passively view their phone versus the control object. Since beta activity is positively correlated with alertness and attention, we predict greater beta power in the phone condition. Furthermore, we predict a correlation between beta power in response to one's phone and attenuation of the P3 oddball effect by one's phone; that is, the more attention is garnered by one's phone the more we think their phone will distract from a phone-irrelevant attention task. Preliminary data suggest increased beta activity in the presence of the phone and replication of the classic P3 oddball effect, but are unclear about an impact of smartphone presence on P3 amplitude.

Kidwell, Emma

Institution: *OK - University of Central Oklahoma*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Vance Claire *Emma Kidwell* *Alyssa McDowell*
Kevin Fink

Abstract Name: **How Gender Influences Gym Comfort Level in UCO Students, Staff and Faculty**

Background. Physical activity and its positive effect on overall health has been studied for decades. The goal of this research is to understand if there are observable differences in gym comfort level between self-identified genders. Methodology. Researchers curated an online questionnaire to measure one's comfort level in the gym. Data collection spanned over 6 weeks during the summer of 2022. The participants (N = 290) were 24.83% cis men, 65.52% cis women, and 9.66% transgender/gender-non-conforming (GNC). Results included students, staff and faculty with several cross-tabulations functions performed through SPSS 28.0 to examine differences between self-identified genders. Results. Notable results indicated that on a scale of 1-10 (lower scores indicating less comfort) the average result for cis men being 7.90, cis women at 5.21, and GNC individuals at 6.14. Percentages listed indicate a "yes" to if participants are comfortable in certain settings. 83.33% of cis men were comfortable participating in weight training activities in contrast to 35.79% of cis women and 53.57% for GNC individuals. When asked about cardiovascular training, 100.00% of cis men were comfortable as opposed to 76.32% cis women and 75.00% of GNC individuals. Those who were comfortable in the gym in terms of social setting were: 80.56% cis men, 37.37% cis women and 46.43% GNC. Discussion. Through data collected, researchers have been able to support the hypothesis that there are differences in gym comfort levels between gender identities. One limitation was confronting how to protect transgender or non-cis individuals because the response was very low. To do this, all non-cis people were grouped into one category (though researchers acknowledge that there are differences between trans/gender fluid/non-binary individuals). Possible outcomes to this result could be future improvement on making public and private gyms feel more open and comfortable to all genders.

Kielman, Alexis

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alexis Kielman,
Brianna Finke,
Bethany Laatsch,
Sanchita Hati,
Sudeep Bhattacharyay

Abstract Name: **Conformational Dynamics and Function of?Escherichia coli?Prolyl-tRNA Synthetase in Crowded Environments**

Conventionally, enzymes are studied in vitro under dilute conditions. However, in vivo conditions are different; enzymes are surrounded by the crowded cellular milieu that contains a variety of molecules of different shapes and sizes. Crowding impacts the structure, function, and dynamics of enzymes, the molecular mechanism of which has remained only partially revealed. In the present study, the crowding mechanism was investigated by replicating the intracellular crowded environment using synthetic polymers and their monomers. The model enzyme utilized was Escherichia coli prolyl-transfer RNA synthetase (ProRS), a multidomain enzyme involved in catalyzing the ligation of proline to tRNAPro during protein biosynthesis. The conformational dynamics and function of ProRS in crowded conditions were probed using intrinsic tryptophan fluorescence spectroscopy, molecular simulations, and enzyme kinetics. Results of this study are expected to shed light on the molecular mechanism of crowing and aid in structure-based drug design. Preliminary results of the study will be presented.

Killian, Shannon

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Shannon Killian,
Alexander Stockwell,
Han Do,
Fernanda Bahena,
Stacy Chamberlin

Abstract Name: Identifying Cognate RNA Sequences of Non-Structural Protein 9 in SARS-CoV-2

As an RNA+ virus, SARS-CoV-2 infection (COVID 19) leads to direct translation of viral RNA to produce non-structural proteins (Nsp) responsible for viral replication. For example, Nsp 7 and 8 are thought to act as a helicase, Nsp 9 as a single stranded RNA binding protein and Nsp 12 as the replicase essential to the proliferation of the virus. Studies of homologous, Nsp 9 proteins in HSV, MERS, and SARS-CoV-1 indicate this protein binds both DNA and RNA sequences. In SARS-CoV-2, Nsp 9 contains an unusual OB, greek key motif thought to keep RNA single stranded for efficient replication in other viruses. Together these results suggest, Nsp 9 may function in SARS-CoV-2 to keep the viral RNA linear for replication by Nsp 12; however, little is known about the RNA binding requirements or structural contacts and interactions in this protein-RNA complex. Tryptophan fluorescent studies of Nsp 9 have been developed to identify cognate RNA binding sequences and structures. Initial studies indicate binding of an RNA pseudoknot structure in the 3'-untranslated region of the viral RNA. Further analysis of RNA structural requirements for stable Nsp 9 binding will be important in further deciphering the role of Nsp 9 in SARS-CoV-2 as pseudoknot structures in the 5' and 3'-UTR have served as a switch from viral RNA translation to replication and may serve as a handle for control of this ever infecting and mutating virus.

Kim, Daniel

Institution: ***OK - Cameron University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Daniel Kim,
Jason Cousineau,
Nathalie Moro

Abstract Name: Investigation of electronic and hydrodynamic properties of fluorescent probe molecules in reverse micellar environment

The electronic and hydrodynamic properties of fluorescent Texas red dyes have been investigated in confined and crowded reverse micellar environments. Various steady-state and time-resolved spectroscopic techniques such as UV-Vis absorption and fluorescence emission as well as Dynamic Light Scattering (DLS) were employed to determine various photophysical parameters such as band shift and fluorescence quenching etc. The results obtained in confined environments were compared with the results in aqueous environments. Our experimental observation shows that Texas red behaves very differently in a reverse micellar environment as compared to an aqueous environment. Furthermore, our results show that the dye undergoes aggregation inside reverse micelles.

Kim, Erica

Institution: *FL - University of West Florida*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Erica Kim,
Karen Barnes

Abstract Name: **Comparative Analysis of Centella asiatica Components in Cosmetics Using Solid Phase Micro- Extraction (SPME) and Gas Chromatography-Mass Spectrometry (GC-MS)**

The cosmetic industry regularly markets new lines of products focused on the latest trendy ingredient. Recently,skincare companies advertised ointments and balms with pseudo-pharmaceutical benefits under the portmanteau of "cica"-care.The supposed plant ingredient,Centella asiatica, is well-documented in medicinal texts across the Asian continent. While most prevalent in Ayurvedic and traditional Chinese remedies, this flowering herb also originates incountries such as Malaysia, Brazil, Nepal, and Kenya. Contemporary studies have suggested properties of wound healing, anti-inflammation, and improved cognition.C. asiaticais best recognized by its eponymous centelloids, or its pentacyclic triterpenes and triterpenoids. However,a comprehensive profile of its smaller secondary components was used in this project as a basis of reference in testing cosmetics for the plant ingredient. This system of comparison was quantified by giving each tested product a point formonoterpenoids, monoterpenes, or sesquiterpenes found in the plant leaves alone. Aggregated lists of detected compounds were also juxtaposed with lists produced after testing non-"cica"-care topical products. Samples were run using a solvent-free and low-preparation extraction method known as SPME, or solid phase micro-extraction. The volatiles were adsorbed onto a specially coatedfiber, exposed within the headspace of a sample vial. These analytes were desorbed for analysis when thefiber was re-exposed within the injection chamber of a gas chromatography-mass spectrometry instrument. This method was used to compare volatilecompounds foundin the plant leaves, in a selection of popular "cica"-care products, and in a number of comparatively cheap and dermal creams. The resulting rankings decreased confidence in the majority of the productlabel claims, and called into question the validityof the marketed hype.

Kim, Jihee

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Oltjona Muca,
Jihee Kim,
Omar Ghandour,
Analía Dall'Asén

Abstract Name: **Exploring the Raman Scattering Response of Meteoritic Fragments**

Raman spectroscopy is a technique that has been used extensively on different kind of samples (carbon allotropes, semiconductors, polymers, microplastic particles, microorganisms, cells, etc.) since it is a nondestructive tool that provides information about their structure and material composition. In particular, it has been employed on meteoritic samples which in general are mainly composed of micro/millimeter sized inclusions, surrounded by a matrix of microparticles, that date from around the time of the formation of our solar system. The study of the physical properties of these relics using Raman spectroscopy can help to understand how planets formed since they can give evidence of the conditions (e.g., thermal, temporal and barometric) in which the materials found in the meteoritic samples developed in our solar system. However, not all the constituents of meteoritic samples have a Raman signal with a high signal-to-noise ratio, or other phenomena present in those materials (e.g., fluorescence) can hide some Raman features. In this work, we examine several meteoritic fragments that have recently been acquired by our group, such as carbonaceous chondrites Northwest Africa (NWA) 7184 and Aguas Zarcas, using this experimental technique. We explore the surface of these samples carrying out Raman spectroscopy measurements on numerous inclusions and surrounding matrix to find materials with high signal-to-noise ratios to analyze the mineralogical composition of the fragments. We correlate these results with other experimental techniques (e.g., optical microscopy, scanning electron microscopy, energy dispersive X-ray spectroscopy and/or atomic force microscopy) to look for signatures of the physical processes that drove the formation of these meteorites.

Kim, Jin Yeong

Institution: *GA - Georgia College and State University*

Discipline: **Biology**

Author/Contributors:
Alexandra Furney,
Brittany Benner,
Jin Yeong Kim,
Arnab Sengupta

Abstract Name: **Role of Regulatory mRNA Structures in the Expression of Cancer-Related Genes**

Messenger RNA (mRNA) translation, the synthesis of proteins based on genetic code, is an essential process in gene expression. Translation is often inhibited when cells are under stress, but there are mechanisms that allow certain genes to bypass stress-induced inhibition. Prior studies have identified a list of genes that disregard stress signals to continue mRNA translation using regulatory RNA structures to hijack the translational machinery. We hypothesize that stress-signals must alter the RNA structure to trigger structure-mediated mRNA translation. Our target genes include oncogenes HIF1A, FGF2, and tumor-suppressor gene TP53. We aim to amplify regulatory mRNA regions previously reported for each gene from A549 lung carcinoma cell lines. Next, we will build and compare structure models for regulatory regions under three conditions: (a) cell-free, (b) in-cell unstressed, and (c) in-cell stressed. For structure modeling we use SHAPE-MaP, a chemical-probing strategy analyzed using next-generation sequencing (NGS). We have successfully extracted, probed, and amplified the target regions using gene-specific primers, reverse transcription (RT), and polymerase chain reaction (PCR). We analyzed PCR products using gel electrophoresis. Here we describe our experimental workflow along with data from NGS library preparation. Applying NGS using the Illumina MiSeq platform on target mRNAs, we will build RNA secondary structures with Shapemapper2 and SuperFold software packages. Our long-term goal is to describe structure-based mechanisms by which translation of cancer-causing mRNAs can be blocked, and how translation in cancer-fighting mRNAs can be reengaged.

Kim, Youjin

Institution: *TX - Texas Woman's University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Youjin Kim,
Shiru Lin

Abstract Name: **Computational Chemistry on Investigating Copper, Nitrogen-doped Graphene Catalyst for CO2 Reduction Reactions**

With the growing use of fossil fuels, CO2emission is also sharply increasing. This increase directly correlates to the recent global warming issues, affecting the environment, human survival, and development. Although plants undergoing photosynthesis may regulate carbon dioxide levels, the severity of the current CO2 emissions is not sufficient to stabilize the CO2 concentration. However, the CO2 reduction reaction(CO2RR) is a potential solution to reducing CO2 levels by converting CO2 into fuels and raw materials. CO2RR will not only be environmentally sustainable but will also economically sustainable. A CO2 reduction reaction is a series of chemical reactions that converts CO2 into potential products and applications. The products of CO2RR include C1 products, such as CO, HCOOH, and CH4, and C2+ products, including C2H4, ethanol, and so on (see attached figure). However, not all CO2RR products are of equal importance and have similar applications. For example, aC1 product, such as CH4, is mainly used in natural gas and metal smelting. On the other hand, a different C1 product, CO, carbon monoxide, is used directly as fuel. Therefore, the selectivity of catalysts toward CO2RR is crucial. Out of various catalysts, Cu stood out from the many catalysts for CO2RR because of its appreciable CO2RR catalytic performance. In our project, we use Cu@4N graphene material for CO2RR by density functional theory(DFT) computations. We investigate different reaction pathways and products to see their reaction energies and find whether Cu@4N graphene is an ideal catalyst for CO2RR. If Cu@4N graphene is a suitable catalyst, we can also study which C1 product is the most favorable on Cu@4N.

Kim, Yushin

Institution: ***WI - Concordia University***

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Yushin Kim,
Terry-Elinor Reid

Abstract Name: **The Search for HIV Latency Reversing Selective HDAC3 Inhibitors Through Virtual Screening**

There are numerous antiretroviral therapies (ARTs) developed for treating HIV, lowering the viral load to undetectable levels, thereby inhibiting transmission of the disease. However, HIV remains incurable due to the presence of latent HIV reservoirs that are not treatable with the current ART. In addition, the life-long use of ART by patients results in chronic side effects, thus a cure is needed. Herein, we report the use of Computer-Aided Drug Design (CADD) approaches to identify latency-reversing agents (LRAs), like histone deacetylase 3 inhibitors (HDAC3Is), that can be included in the ART regimen. Concomitant activation of latent reservoirs with an LRA and inhibition of viral replication with ART, via the “shock and kill” method, is one approach to potentially curing HIV. Although there are class I HDACIs on the market, they are not selective and cause drug-induced adverse effects. To overcome the challenge of selectivity by the well-known LRA HDAC3I, which plays a significant role in HIV latency, we took advantage of the presence of un-conserved regions of the allosteric corepressor site of HDAC3. HDAC3 activation requires exclusive complexation with the SMRT/NCoR corepressor to carry out its catalytic function, so inhibition of HDAC3-SMRT/NCoR complexation by small-molecule(s) results in enzyme inactivation. Towards this end, we conducted molecular docking to screen our in-house and ZINC chemical libraries to identify potential hits. The top hits identified were then assessed in vitro for their HDAC3 inhibitory activity and selectivity. Thus far we have identified an HDAC3 inhibitor with an IC50 of approximately 5.11μM and we are continuing our exploration to identify other diverse scaffolds.

King, Emma

Institution: ***TX - Tarleton State University***

Discipline: **Social Work**

Author/Contributors:
Miranda Olvera,
Emma King,
Hannah Reeves

Abstract Name: **Adult Perception on Outcomes of Child Custody Cases**

Custody cases are meant to find the best possible option for the child, the process the child experiences lead to negative mental developmental outcomes.Throughout the family court process the families often face challenges that may consist of stress, role confusion, financial struggles, depression, anxiety and many transitions and changes to their everyday lives. One major obstacle for many families that have to deal with family court orders are the financial overloads placed on families. Private information often causes tension in families and households. This mixed methods study focuses on adults who have experienced a child custody case at any point during their childhood using a pre-developed Perception Survey.The survey consisted of 15 questions including demographic, multiple choice and open ended. Twelve articles were reviewed by the student researchers focused mainly on parental alienation, including factors associated with child custody cases and family court proceedings and how they affect the child involved.The student researchers used the literature review to aid in developing their research. This exploratory study explores the effects of child custody cases on mental development of children. The student researchers plan to study the impact of child custody cases by identifying the mental development outcomes of adults, who were a part of a child custody case. The student research group developed the following research question: (1) What are the mental development outcomes of children who were part of a child custody case? The study includes participants older than 18, who were involved in a child custody case when they were under the age of 18. Through purposive sampling, the researchers survey 75 participants to gain a better understanding of their perception of their childhood experiences during their child custody case.

King, Lauren

Institution: ***TX - Lone Star College***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Lauren King

Abstract Name: Reality is Virtual: A Content Analysis of Eric Whitacre's Virtual Choir Compositions "Sleep" and "Sing Gently"

This research investigates musical, lyrical, and audience reaction aspects of virtual choir composition to determine whether these aspects are uniting or discrepant and will contribute to the virtual choir's continuing popularity and originality as an art form, and staying potential as the world moves on post-pandemic. Virtual choirs, ones in which performers record their individual parts and editors compile the parts into a production aired on an online platform such as YouTube, have increased in visibility because of the COVID-19 pandemic. The popularity of virtual choirs within the context of COVID-19 calls into question virtual choir's staying power post pandemic. First, definitions of virtual choir formatting and substance are given and a discussion of virtual choir's current limitations and explosion in popularity associated with the COVID-19 pandemic is held. Next, a content analysis of prominent virtual choir composer Eric Whitacre's pre-pandemic written "Sleep" and post-pandemic written "Sing Gently" compositions is conducted in order to highlight strengths of Eric Whitacre's virtual choir in continuing and transforming the art. Additionally, comments posted to YouTube on the original postings of "Sleep" and "Sing Gently" were analyzed to garner audience reactions. This research reveals that the virtual choir format in generality and Eric Whitacre's compositions in specificity are most translatable as a stand-alone art form for their synchronicity between lyrics and music, and relatability to personal experience. These findings enhance the healing potential of music to include music aired in the virtual choir format, demonstrating that unity among people, just as unity between music and lyrics, provides the best chance for originality to thrive.

King, Wren

Institution: ***WV - West Virginia University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Wren King

Abstract Name: Harm Reduction in West Virginia: Awareness in Action

As the nation grapples with the continuing opioid epidemic, it has become increasingly obvious that more intensive interventions must be made in order to save lives. Harm reduction has arisen in recent years as an excellent methodology that destigmatizes and humanizes people in addiction. West Virginia is widely considered the epicenter of this epidemic and has experienced widespread negative societal impacts as a result. Formalized harm reduction programs have been in action in the state for the past decade, but many principles have been at work for decades in various forms. I discuss this with a case study on a West Virginia University organization established in 1969 called the Council on Drug Information. This interdisciplinary community organization centered at the university provided evidence-based information on drugs and drug use through a comprehensive educational program and a 24-hour phone line with a citizen-based crisis response team. Their work outlined what we now know as harm reduction decades before the principles were outlined.The purpose of this research is to overview the principles of harm reduction, compile a brief history of the opioid crisis in West Virginia, and argue for the expanded implementation of harm reduction principles in response to this crisis. This study utilizes an interdisciplinary literature review on harm reduction and the opioid epidemic and archival source analysis.

Kinstler, Hayden

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Hayden Kinstler,
Matthew Jewell,
Isabella Doss

Abstract Name: **Microstructural origin of mechanical damage in REBCO superconducting tape**

Rare-earth doped barium copper oxide (REBCO) is a superconducting tape made of multiple thin-film oxide layers that is capable of carrying large electric currents at magnetic fields exceeding 20 Tesla. This allows REBCO to be used in advanced high-field magnet systems in nuclear fusion reactors, which is done by combining multiple tapes into a single high-current cable. The cabling process requires bending the tape around small radii, and this process can introduce mechanical damage in the tape. In this study, we examine tapes that passed or failed a cabling bend test, in order to understand the microstructural origins of the damage induced by the bending. To do this, we imaged the surface of the tapes using a violet-laser scanning confocal microscope and a scanning electron microscope with EDS capability in both backscatter and secondary electron modes to understand the microstructure and surface homogeneity of the samples. We further used nanoindentation to assess the relative mechanical properties of good and bad tape samples. By identifying the structural and mechanical differences between the tapes that passed the bend test and those that failed, we can provide design guidance back to the manufacturer of the tape, so that they can improve the quality and reliability of the manufacturing process. This in turn, should help ensure that the REBCO superconductor can be a reliable conductor for a wide variety of high-field magnet applications.

Kipese, Bupamba

Institution: *VA - Liberty University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Bupamba Kipese,
Songsu Son

Abstract Name: **Use of Waste Plastic Bottles as a Modifier of Asphalt Pavement Materials**

Over fifty billion plastic bottles of water were used in the US in a year and only less than one-third of those bottles were usually recycled. It takes up to a thousand years for each bottle to decompose. The use of plastic waste in road construction has recently come to the limelight. Several previous studies reported that when plastic was melted and coated on the surface of the aggregates, the molten plastics showed very good adhesion properties. However, the main concern of this application using waste plastic in road paving is that heating plastic over its melting temperature can often release toxic fumes. This study investigates the potential of utilizing waste plastic bottles as reinforcing fibers through the dry process without melting them to improve the performance of asphalt pavements. Adding the fibers into asphalt pavements is expected to improve the tensile resistance of asphalt pavements and might result in potentially reducing the thickness of the asphalt layer, reducing material cost, and increasing the use of waste to protect the environment. This study involves laboratory tests including fracture test, rutting resistance test, and moisture susceptibility test to assess the performance of the asphalt mixture. The results of the tests are then compared with the results of the asphalt materials without plastic additives. This study also explores the physical and mechanical properties of asphalt mixtures containing different waste plastic types. The findings of this research study will not only provide insight into the potential of utilizing waste plastic modifiers for sustainable construction but also provide valuable information for pavement engineers and contractors to optimize asphalt mixture performance.

Kirkendol, Alixandria

Institution: *TN - University of Memphis*

Discipline: Education

Author/Contributors:
Alixandria Kirkendol *Jaime Sabel*

Abstract Name: **Exploration of Undergraduate Biology Students' Engagement in Metacognition**

How a student utilizes a study method, comprehends a subject, and prioritizes learning can all be used to differentiate how students engage in metacognition. Metacognition is the process of thinking about one's own thinking and understanding; when a student is aware of their own understanding, they can make improvements to study plans, and make adequate changes to improve comprehension of material.At our university, there are five core biology courses required for the biology major; students in each course participated in surveys and interviews during the course, answering questions related to the principles of metacognition. In our analysis of the responses, we asked the following research questions: (1) What are the individual characteristics of different levels of metacognitive engagement?, (2) What is the relationship between the four levels and three dimensions of metacognition?, and (3) How do metacognitive levels and dimensions vary depending on students' grades?.Responses from individual students were classified into four metacognitive levels as proposed by Stanton et al. (2015): Not Engaging, Struggling, Emerging, and Developing. We examined trends in responses within each of the four levels to identify any defining characteristics. We found that there are three overarching concepts that vary between all four levels: 1) the ability to identify poor study habits and capability to make changes, 2) the emphasis placed on grading and how it affected study effort, and 3) the focus on comprehension rather than rote memorization. We then explored the presence of the three dimensions of metacognition, as defined by Grotzer and Mittlefehldt (2012): Intelligibility, Plausibility, and Wide-Applicability. In this presentation, we will discuss the trends found among students in each of metacognitive levels and the overarching trends of metacognitive dimension presence in relation to student grades. These findings will be of benefit, further defining how metacognition develops and exemplifies in students.

Kirkwood, Cierra

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cierra Kirkwood

Abstract Name: **Heavy Metal Analysis of Wetlands in Northern Wisconsin**

Copper, lead, and zinc are common toxic heavy metals that are found in contaminated soils. The primary sources of heavy metal contamination are industry, agricultural runoff, sewage that is improperly treated, and atmospheric deposition. There is currently no baseline for zinc, copper, or lead levels in wetlands in Northern Wisconsin. I analyzed wetland soil core samples that are surrounded by agricultural and urban land use to determine if there is heavy metal contamination coming from those sources. In addition to urban and agricultural land uses, I analyzed soil from a natural wetland to determine base levels of heavy metals. Zinc was found in the highest concentration in every sample collected. Lead was consistently found in the lowest concentration. Copper was found to be variable in all soil cores.The wetlands surrounded by urban land use had the highestconcentrations of the heavy metals analyzed. Wetlands surrounded by agricultural and natural land uses had similar heavy metal concentrations.

Kirsch, Kaitlin

Institution: ***IL - North Central College***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Augusta Krawczyk

Abstract Name: NCUR Murals Project (Collaborative Artistic Project)

I am a studio artist based in Chicago, Illinois. I find inspiration from the outside world and mix it with my individual experience. Looking inward is just as crucial as looking outwards. As a feminist artist, my process includes taking life lessons learned about the culture in which I live and putting my surrealist spin on it. My process starts with picking a topic I want to portray, then I create collage-like digital renderings. From there, I take those renderings and paint them on stretched canvases. I mainly work in oil paint, but I work in acrylics as well. My specialty includes equity, diversity, and social justice. I use these topics in all of my artwork. These conference topics fit perfectly for me since these themes are my main focus as an artist. My collaboration skills are also perfect for this conference since I always surround myself with fellow artists whom I look to for inspiration and critiques. An example of teamwork is when I worked alongside my peers to paint a fiberglass truck for a company in downtown Naperville. We spent two weeks painting the truck and communicating with the client. We ensured the work we were doing was up to their standards. Obtaining the opportunity to collaborate with artists of different styles and backgrounds will be conducive to a motivating environment. I am always looking to enhance my experiences as an artist and sharpen my group skills.

Kittelson, Jill

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Mathematics

Author/Contributors:
Allyson Goeden *Jill Kittelson*

Abstract Name: Relating Patterns in Mathematics & Statistics Tutor Center Use to Student Success

Our research explores usage patterns of the mathematics and statistics tutoring services provided by a regional comprehensive university, and how these patterns relate to student success. Tutor service is available at no charge to students and supports 100- to 200-level courses and is staffed by undergraduate and graduate students. General trends are explored, and statistical models are built to identify connections between student success and frequency of attendance. Our data set consists of date and timestamp information per student visit to the mathematics and statistics tutoring center at a regional comprehensive university during the Spring 2022 semester. The visit information is joined by ID number to other details (class standing, GPA at the semester of interest, demographic information, major/minor, and overall grade in the class that they received support for). A comparison group of students in the same classes that did not attend the tutoring center during the semester was gathered. The same variables excluding timestamps were recorded for this group. Students are matched between tutoring and comparison groups by similar characteristics (e.g. GPA, major) and analyzed. Statistical models (ordinal and logistic regression) are created to relate student success to how often they attended tutoring. By including a comparison group, we can compare success rates between those who attend tutoring and those who do not. Our research provides a foundation for the university to continue monitoring relationships between tutor center use and student success. Our results highlight how student success metrics link to the tutoring center service provided by the university. Generalized student use patterns and metrics are shared to provide recommendations to better staff the tutoring center and answer other questions. Results will be reanalyzed each semester in the center with additional data. Similar methods can be applied to tutoring centers in other subjects or at other universities.

Kjornes, Kelli

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Kelli Kjornes,
Anaka Hanson

Abstract Name: **The Effect of an IPE Simulation on the Self-Efficacy and Knowledge of PT, OT, and SLP Students**

The implementation of interprofessional education (IPE) for students is an important learning opportunity where they can gain skills that will help facilitate successful collaborations with various professionals in their future careers. Measurement and documentation of student learning is critical to justify ongoing implementation of these IPE experiences. Most tools that are used to assess student learning about IPEand interprofessional practices (IPP) are self-efficacy scales that measure students' own perceptions. Measurement of change in student knowledge associated with IPE is rarely reported in the literature but would lend more support to the value of IPE. The purpose of this study is to determine how students' self-efficacy compares to their actual knowledge before and after participating in an IPE simulation. Speech language pathology (SLP), occupational therapy (OT), and physical therapy (PT) students willwork in interdisciplinary groups to complete a co-evaluation of a simulated stroke patient, with opportunities for discussion and feedback during the process. The students will complete the Interprofessional Collaborative Competency Attainment Scale (ICCAS) and answer knowledge-based questions before and after the simulation in a Qualtrics survey. Student self-efficacy and knowledge-based scores will be reported as quantitative data. Students will also complete a reflection on the event, providing qualitative data about their learning and growth. The results of this study will help determine whether this type of IPE simulation is effective in increasing students' knowledge about working in interprofessional teams.

Kladar, Erica

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Connor Garland,
Erica Kladar,
Qianlong Liu,
Brett Neumann

Abstract Name: **The Determinants of Income Inequality in Rural Wisconsin and Policy Implications**

Rural communities in Wisconsin are currently facing many economic challenges, namely high levels of poverty, declining population, lack of high-quality services, and poor infrastructure. These are issues that call for innovative and creative approaches and require prompt attention. This project is a collaboration of three faculty members at the Department of Economics at our institution. Our project has three main goals. First, we propose to measure regional, particularly rural, income disparities while identifying the main explanatory factors with American Community Survey data and quantile regression analysis. Second, we will examine and quantify the impact of entrepreneurship, growth of immigrant populations and access to broadband on rural incomes in Wisconsin. Third, we will offer insights and recommendations to Wisconsin policy makers. Our research findings will help assess economic needs and resources and provide policy options to address challenges facing rural communities.

Klamut, Natalia

Institution: *CO - University of Colorado at Boulder*

Discipline: Biology

Author/Contributors:
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Jennifer Law *Roopa Kanakatti Shankar* *Wendy Brickman*
Siddharth Prakash *Tazim Dowlut-McElroy* *Susan Howell*
Shanlee Davis

Abstract Name: **Diagnostic, Perinatal, and Medical Features of Turner Syndrome with Trisomy X Mosaicism: An InsighTS Study**

Objectives: Turner Syndrome (TS) occurs in ~1 in 2000 females who have partial or complete absence of the second sex chromosome. Half of the girls with TS have a single monosomy X cell line (45,X) and ~20% have typical female chromosomes in some cells (45,X/46,XX), while mosaicism for a trisomy X cell line (45,X/46,XX) occurs in only ~3% of girls with TS. Data on mosaic 45,X.47,XXX are limited. The aim of this study was to describe the phenotype of 45,X/47,XXX and compare to TS with 45,X and 45,X/46,XX.
Methods: The InsighTS Registry has enrolled 325 females with TS across the US and obtained histories from medical records. Those with 45,X/47,XXX, 45,X/46,XX, and 45,X were included in this analysis. For medical diagnoses, each subject with 45,X/47,XXX was age-matched to a subject from each of the other two groups (1:1:1). Outcomes including timing and reason for TS diagnosis, birth history, and medical diagnoses were compared between groups.
Results: For participants diagnosed postnatally, age of TS diagnosis was older in those with 45,X/47,XXX compared to 45,X. Indications for postnatal genetic testing were different between groups with the 45,X/47,XXX group being more likely to be diagnosed due to delayed puberty/amenorrhea compared to non-mosaic 45,X and less likely to have lymphedema as a neonatal complication. Compared to the non-mosaic 45,X group, girls with 45,X/47,XXX were less likely to have a diagnosis of short stature and eczema. Compared to the 45,X/46,XX group, the 45,X/47,XXX group was more likely to have structural heart disease or ovarian insufficiency.
Conclusions: This large TS registry suggests mosaicism with a 47,XXX cell line may be more common in girls with TS than previously reported. In addition to expected differences between girls with 45,X/47, and non-mosaic 45,X, we identified several differences between mosaic 45,X/47,XXX and 45,X/46,XX individuals for the first time.

Kleinerman, Madeleine

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Madeleine Kleinerman

Abstract Name: **"All the Faded Roses Shed": Beauty, Mortality, and Divinity in Paradise Lost**

Given that Milton uses "beauty" so many times in Paradise Lost to describe Eve, it is perhaps easy to assume that she is characterized primarily as an objectified counterpart to Adam. But Eve is central to Milton's narrative about choice, free will, and knowledge—and the narrative relies on her choice to eat from the tree of knowledge. My analysis illustrates how Milton crafts a definition of "beauty" unique to Eve that is both holistic and empowering. References to Eve's beauty do not always line up with her inferiority to Adam. While her beauty is gentle, this gentleness points not to her weakness but to her understanding of her self love and to her potential mortality. Eve's greater removal than Adam from God's image lends her more free will, humanity, and potential to fall. Since her beauty has the potential to deteriorate if removed from the image of God, it is both a mark of her divinity and the possibility of mortality granted to her by free will. I suggest that her beauty is not simply a veneer—if it is not a reflection of some internal virtue, then she is nothing but a trap that God has set for Adam. Ultimately, it is the fact that Eve's uniquely feminine beauty is not enough that she eats from the tree of knowledge. I conclude that after the fall, while she and Adam's beauty will fade as they approach death, its continuance is a reminder of their potential for divinity and the virtue they may still achieve in their mortal states.

Kleist, Sterling

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Sterling Kleist

Abstract Name: Printing Bronze with a (Cheap) 3D Printer

Metallic additive manufacturing (MAM) techniques that can print metallic parts with high dimensional accuracy have been around for 30 years now, but typical industrial setups can cost anywhere between $100,000 and $500,000 dollars or more. Fused deposition modeling (FDM) is a similar additive manufacturing process that includes building up prints layer by layer using various thermoplastics, and the average small-scale machine can cost anywhere from $200 to less than $10,000.
Using an FDM printer and a hybrid thermoplastic-bronze particle filament, parts can be printed and processed to produce a completely metallic part. This procedure includes up-scaling and printing the desired part, then debinding the plastic mass and sintering the metallic mass through two separate cycles. This project's focus is on the complete manufacturing process of such parts, as well as their mechanical functionality. Dimensional control of the finished parts is difficult, with the finished accuracy being largely determined by the accuracy of the printer as well as part geometry, which can cause unexpected degrees of shrinkage during debinding and sintering. Wall thickness also impacts the accuracy of post-processing, with thin walls being preferred to allow volatized plastic to exit the part during debinding without bloating or rupturing the part geometry.
In mechanical tests, the finished bronze parts currently fail at or slightly above one third of their expected UTS. Using scanning electron microscopy, white light microscopy, tensile testing, hardness testing, and a custom program written to calculate the actual density of a cross-sectional area from visual graphics, improvements are being made to the sintering step of post-processing to improve the mechanical viability of this vastly cheaper MAM procedure.

Klepac, Simeon

Institution: *IN - Valparaiso University*

Discipline: Art/Music History

Author/Contributors:
Simeon Klepac

Abstract Name: Music, Memory, and Murder: An Investigation into Murder Ballads as Monuments

Murder ballads are a type of folk music which tells the story of a murder, and they have a richhistory in both England and America. As with other forms of folk music, murder ballads naturally adapt and change over time as they are transmitted to different communities. However, murder ballads also serve as vessels for the historical memories of crime, whichpresents a tension between the preservation of memory and changes caused by folk transmission. This paper investigates how murder ballads perserved and altered memory accrossdifferent communities. I explored this phenomenon by comparing "Knoxville Girl", as performed by the Louvin Brothers in 1956, to "The Berkshire Tragedy", an 18th century manuscript of a British ballad based upon a historical murder. According to the academic consensus, these two ballads are variations of a single ballad because of the narrative similarity they share. I also examined archival records and diaries that indicate a factual basis for the events in "The Berkshire Tragedy" and studied other documented variants of the ballad. I analyzed both the historical records and the differences between the two ballads to understand how the memory within the ballads changed over time. This analysis demonstrated that while "Knoxville Girl" preserved the central narrative memory within "The Berkshire Tragedy" across continents and centuries, the ballad altered details such as geography, relational dynamics and the fate of the criminal as a result of organic variations in oral transmission and songbooks. These changes in memory primarily reflect the need for the ballad to entertain, resonate with, and be relevant to the community that constitutes its audience and underscores that memory is largely determined by the community that perpetuates it. Performance environments have a considerable impact on the memory preserved within artistic media, especially that within folk traditions.

Klevann, Annabelle

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Bryanna Rayhorn,
Annabelle Klevann,
Sarah Vitale,
J. Brian Mahoney,
Laurel McEllistrem

Abstract Name: **Lake Eutrophication: Natural vs Anthropogenic Phosphorus?**

Lake eutrophication in western Wisconsin results from excessive nutrient loading (P, N), and mitigation of the issue requires quantification of the ultimate nutrient source. Lake eutrophication events are not consistent across the region, but seem to vary with bedrock geology, hydrogeology, and land use. Lake eutrophication is assumed to be the product of nutrient overload associated with agricultural runoff. A regional surface water study shows elevated concentrations of P across the region. Seasonal values vary between peak agricultural months (July: ~160-180 ppb) and the winter months (November: ~20-95 ppb).
The same study analyzes groundwater, documenting extremely elevated levels of P, which is problematic because it is believed that agricultural P does not enter the groundwater system due to absorption by the soil profile. The ultimate source of P in groundwater is unclear and discerning the role of anthropogenic vs natural P is difficult.
Aquifers in the region are largely hosted in Cambrian bedrock, which hold more P (~2000 ppm) than groundwater (~ 0.5-1.6 ppm), and surface water (<.2 ppm). Sequential extraction demonstrates that P is bound with Fe-Mn oxides, which suggests that anoxic conditions in aquifers could lead to the influx of P from Paleozoic bedrock. Bedrock derived P may lead to elevated concentrations in groundwater, and therefore contribute to lake eutrophication. It is feasible that agricultural P may not be the primary driver of lake eutrophication.

Klinder, Ash

Institution: *IL - Joliet Junior College*

Discipline: Biology

Author/Contributors:
Ashley Klinder

Abstract Name: **Results of a Ruptured Logjam on Macroinvertebrate Diversity and Stream Quality: Comparisons of 2 years**

The addition of large woody debris to streams and rivers is a popular restoration technique to combat ecological stress. These logjam additions break down from natural stream conditions, so understanding how a logjam rupture impacts nearby microhabitats could provide insight into future stream conditions after woody debris jams are changed or removed. Macroinvertebrate populations and taxa diversity are associated with stream health; after a rupture, stream quality was predicted to decline due to fewer habitats and different dominant taxa. The objective of the study was to compare Van Horn Woods East, Plainfield Illinois's data using the Illinois RiverWatch protocol and documentation of the previous years' Macroinvertebrate Biotic Index (MBI), Shannon Diversity Indices (SDI), and dominant taxa individuals. Riffle and snag samples were taken from the stream to collect the macroinvertebrates. 2020-2021 samples were taken in low velocity (0.3 m/sec) or pools with no velocity (0 m/s). The 2022 Logjam sample was from a break where water passed through, creating a high-velocity flow (0.7 m/sec). A chi-square analysis was performed with the subsampled data from EPT (Ephemeroptera, Plecoptera, Trichoptera) and pollution tolerant/intolerant individuals. 2020, 2021, and 2022 showed significant differences ($p < 0.001$) between all comparisons except the upstream sample and the logjam of the same year. Taxa dominance and SDI differed between samples, and MBI showed reduced stream quality over the study. Although many environmental factors may be interacting in changes observed between 2020 and 2022 there was a general decline in stream quality, and changes in EPT/nonEPT, pollution intolerant/pollution tolerant, and dominant taxa and diversity observed over time.

Kline, Maranda

Institution: *PA - Westminster College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maranda Kline

Abstract Name: Autobiographical Episodic Memory and Personality

There are differences in the way individuals recall past episodes. The purpose of this experiment is to examine the link between autobiographical episodic memories and the Five-Factor Model personality traits. Students from Westminster College were asked to recall a positive and a negative event in as much detail as possible and rate the vividness and clarity of the recollection using an autobiographical memory questionnaire. Participants were also asked to complete the IPIP-120 Personality Test. The results from their self-reported memories were run through LIWC software to analyze metrics like cognitive processes, emotional tone, and word count. Based on previous research, I predict that the biggest differences in memory reliving will come from the specific personality facets within the traits rather than the broad personality trait itself. Previous research suggests that neuroticism will result in more detailed and vivid negative memories and that scoring high in extraversion and openness to experience will result in less vivid memories overall. Research has also found that the higher the use of emotion words, the more immersion in the event, so I predict that higher scores in emotional tone in LIWC analysis, the more vivid and accurate the recall will be in AMQ analysis of confidence/clarity.

Klossing, Brier

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Brier Klossing,
Mike Rentz,
Bob Klaver

Abstract Name: Analyzing the Coyote-Fox-Domestic Cat Relationship

Previous studies have established that the relationship between coyotes and red foxes tends to be negative, correlating to a decrease in red fox populations. The interaction between red foxes and domestic cats has also been studied, demonstrating in their coexistence, cats shift their diets to not overlap with red foxes. I wanted to investigate how coyotes (Canis latrans) may impact the activity/temporal patterns of red foxes (Vulpes vulpes), gray foxes (Urocyon cinereoargenteus), and domestic cats (Felis catus). I studied this using the 2019 and 2020 data sets from Snapshot USA, a nationwide project with over one hundred different sites collecting trail camera data through September and October. To analyze the data, I used the R statistical program with the packages 'tidyverse', 'lubridate', 'lutz', 'overlap', and 'activity' to create graphs of the activity patterns for each species in the presence or absence of coyotes. Domestic cats, red foxes, and gray foxes were more likely to be seen at deployments without coyotes than with. Of the three species, red fox activity is the most affected by coyote presence. Gray fox and domestic cats shift their activity patterns less than expected in the presence or absence of coyotes.

Knecht, Katy

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Katy Knecht,
Vanessa Hulse,
Noémie Elgrishi

Abstract Name: **Aqueous electrocatalytic reduction of nitrite using a copper-containing catalyst**

Nitrogen oxyanions are being found in increasing amounts in water sources, in particular due to the overuse of fertilizers. The presence of nitrogen oxyanions in drinking water and wastewater has been shown to adversely affect natural environments and human health. Of these nitrogen oxyanions, nitrite is the most detrimental to marine life due to its toxicity to fish. Excessive nitrite in water also leads to eutrophication and anoxic water which can culminate in areas such as the dead zone seen in the Gulf of Mexico. Conventional methods for the removal of nitrite include reverse osmosis and ion exchange filtration. Electrochemical methods can be used for the reduction of nitrite and are more desirable due to their sustainability. Nitrite electroreduction can produce gaseous products which are easier to remove. These products can include nitric oxide, nitrous oxide, or nitrogen gas. The reduction is proposed to involve a proton-coupled electron transfer (PCET) process.This project focuses on developing electrocatalysts capable of mediating the PCET processes underpinning the reduction of nitrite in water. The complexes chosen to perform this reduction are bioinspired copper catalysts. Here we report on the effects of pH on the electrocatalytic reduction of nitrite. These studies contribute to determining the underlying nitrite reduction mechanism that is occurring with the chosen catalyst. The mechanistic data informs future work in the electroreduction of nitrite, especially future catalyst design.

Knecht, Tiffany

Institution: *SD - University of South Dakota*

Discipline: **Biology**

Author/Contributors:
Tiffany Knecht *Partha Saha* *Jamie Scholl*
Michael Watt *Denise Arrick* *William Mayhan*

Abstract Name: **The Relationship Between Cerebrovascular Dysfunction and Behavioral Abnormalities in Rats Exposed to Alcohol In Utero**

The purpose of this study was to determine a relationship between cerebrovascular dysfunction and behavioral abnormalities in rats exposed to alcohol in utero. Maternal consumption of alcohol during pregnancy is an established risk factor for fetal alcohol spectrum disorder (FASD), which causes lifelong intellectual and behavioral disabilities, as well as cerebral and cardiovascular dysfunction. FASD is estimated to impact 2% to 5% of children in the United States. While studies have shown impairment in functional responses of cerebral resistance arterioles in rats exposed to prenatal alcohol, no studies have examined the association between impaired cerebrovascular function and behavioral abnormalities. We tested the hypothesis that in utero exposure to alcohol causes cerebrovascular dysfunction, decreasingblood flow and oxygen delivery to the brain, which may contribute to a decline in memory and motor coordination. We fed Sprague-Dawley dams a liquid diet with or without alcohol (3% ethanol) for the duration of their pregnancy (21-23 days). We then performed short-term memory (Novel Object Recognition [NOR]) and coordination (Rotarod) assessments on the offspring during adolescence (4-6 weeks) or adulthood (14-16 weeks). Following the behavioral evaluations, we examined cerebral arteriole reactivity to nitroglycerin (NOS-independent), adenosine diphosphate (ADP; eNOS-dependent), N-methyl-D-aspartate (NMDA; nNOS-dependent), and iloprost (BK channel-dependent). All tests were examined in control male and female and prenatal alcohol male and female. We found impairment in eNOS-, nNOS-, and K-channel-dependent dilation of cerebrovascular arterioles in rats exposed to alcohol in utero. Furthermore, we found short-term memory impairment in rats exposed to alcohol in utero, as well as modest motor learning differences in adolescent, alcohol-exposed rats. Based on the findings, we suggest that impaired cerebrovascular function, resulting in decreased blood flow to essential areas of the brain, may contribute to impaired short-term memory and learning differences exhibited by rats exposed to alcohol prenatally.

Knizley, Amanda

Institution: *NC - North Carolina State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Amanda Knizley,
Sandra Stangeland-Molo,
Jacqueline Cole

Abstract Name: **Characterizing Architecture of a Biomimetic Bone Scaffold**

Biomimetic bone scaffolds are widely studied for applications in wound healing via grafts and for improving microenvironments for in vitro studies. Previous scaffolds mimicking cancellous bone, the porous bone that is most susceptible to damage during aging and disease, have prioritized mimicking either composition (protein and mineral components) or architecture (dense vs. porous) but not both simultaneously, despite the importance of both properties in bone function. As part of a larger study, we created porous, mineralized protein scaffolds to mimic both composition and architecture, and our objective for this work was to analyze the pore characteristics of these scaffolds to determine if they are similar to cancellous bone. Scaffolds of varied composition were created by freeze-drying solutions of three different collagen:chitosan weight % ratios (10:0, 8:2, 6:4) to create pores. Scaffolds were carbodiimide-crosslinked, mineralized for 14 days, and then scanned using nano-computed tomography (1.5-µm voxels) to create a reconstructed 3D image. Using Dragonfly software (Object Research Systems), a small box region (1,284 x 2,017 x 2,302 µm) of interest in each scaffold was segmented, and the average pore size and percent porosity (void volume %) were measured. Analysis is ongoing, but preliminary data across the scaffold formulations show average pore sizes of 43.3 µm for 10:0, 51.8 µm for 8:2, and 57.4 µm for 6:4 and percent porosities of 88.3% for 10:0, 92.3% for 8:2, and 85.2% for 6:4 formulation. Scaffold pore sizes are slightly smaller than the 100-200 µm pores in cancellous bone, and scaffold porosities are a bit higher but comparable to the average porosity of 70-80% for cancellous bone. Scaffold formulations can be further optimized to produce a more accurate model mimicking both composition and architecture of native cancellous bone, which is essential for studying the cellular microenvironment in models of injury and disease.

Knoblach, Lucas

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Biology**

Author/Contributors:
Lucas Knoblach,
Ashlyn Spring

Abstract Name: **Effects of multiple diets on metabolic response in mouse models of SMA**

Spinal muscular atrophy, or SMA, is a neuromuscular disorder that causes morbidity and mortality inbabies and young children. SMA is caused by reduced levels of SMN protein in the body as a result ofmutation of the SMN1 gene.Recently developed treatments are effective at increasing lifespanand are specific to the nervous system. Due to this,new questions have arisen about how additional organ systems are eliciting responses to the disease. One of the potentially disrupted responses is the function of the metabolic system. Initial reports indicate that SMA may alter fatty acid metabolism, cause fatty liver disease, and glucose intolerance. To study SMA, mutant forms of the SMN1 gene have been introduced into research mice to create mouse models of SMA. Our study focused on using mouse models to examine potential disruption of metabolic responses in SMA. Specifically, we usedamild mouse model that has onset of neuromuscular symptoms later in life and is useful as a model for SMA patients that receive treatment. This study focused on observing the effects of diet on SMA mice. We performed this study using three different diets given to both normal, control mice and SMA mouse models. The dietsincluded a normal control feed, a high fat feed, and finally a high sugar feed. Mice were fed these different diets and tested over time for changes in weight and motor function. Motor function was tested using a Rotarod assay. Experiments are currently ongoing and preliminary results will be presented. If our hypothesis is correct, we expect to see abnormal weight gain and motor disfunction in the high calorie diets. If this is observed, this would give insight into the need for treatment of SMA regarding metabolic response.

Knopps, Melissa

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Melissa Knopps,
Josie Jacobson,
Agnes Buttke,
Gabi Bowe-Hanson,
Gracie Hering

Abstract Name: Expressions of Cultural Identities

How might expressions of cultural identities take shape through language, stories, and other learning experiences in an elementary classroom? If preservice educators listen intentionally to the expressions of elementary students, will those studentsshare about their diverse backgrounds and cultural identities? Can these conversations support the classroom in an effort to be more culturally responsive? We will partner with a local elementary school and spendtime on site conferring withstudents about theirperceptions and contributions, connecting students' cultural knowledge to themselves and others through multimodal learning experiences, and gatherdata that will influencefuture teaching practices. Multimodal instruction is instruction that uses social and cultural resources such as drawings, technology resources, picture books, and storytelling. Student voice is listening attentively to students' perceptions and contributions.Cultural identity is the perception of self and others, and how children see themselves as a member of a group.

Knowles, Christina

Institution: ***FL - Stetson University***

Discipline: History

Author/Contributors:
Christina Knowles

Abstract Name: From the Graveyards to the Laboratories: The Legal History of Cadaver Use in American Medical Schools

Due to the critical nature of healthcare, many issues within the domain have attracted controversies, sometimes veering into the unethical practices of preserving the sanctity of the human body. For years, academics in American bioethics have explored the subject of human testing and the murky ethics that allowed horrendous experiments such as the Tuskegee syphilis study and Project MKUltra to be funded and carried out. At the forefront of these experiments lies the American medical schools, and despite the extensive research linking the role of higher institutions to human testing and the protection of the human body, there is a lack of exploration into the institution's role in conserving the integrity of human corpses. Following the explosion of scientific knowledge in the 19th century and the introduction of the anatomy and physiology subfields, American medical schools were highly competitive and filled with unbridled authority. Only the top school offered such classes, and only the most elite institutions allowed their students to have hand on experiences with human cadavers to give them a competitive edge. However, due to the rise in medical students and the limited laws regarding the ethical sourcing of human cadavers, medical schools turn to Night Doctors. Night Doctors – or body snatchers – were frequently employed by elite schools, many of which happen to be modern-day ivy league universities, to rob and remove the bodies of the societally unprotected. This rhetoric cemented the idea that dead bodies, especially those of lower socioeconomic status, were nothing more than economic commodities and created a dark, hidden medical marketplace, thus reinforcing the privileged status of heroic medicine in American society.

Knox, Victoria

Institution: *MA - Bridgewater State University*

Discipline: History

Author/Contributors:
Victoria Knox

Abstract Name: **The Power in Regulating Victorian Women in Prostitution**

During England's Victorian period, the Contagious Diseases Acts were established, which regulated women's bodies and represented the intersectionality of gender, class, and power. Before the CD Acts, England began to grow rapidly during the Industrial Revolution, which was in part made possible by the work of underpaid and undervalued working-class women. One option for women to earn an income was prostitution. Men who worked as sailors and soldiers were common customers in prostitution, which contributed to the rapid spread of venereal disease throughout the British Empire. In the spirit of protecting men, the first CD Acts were passed in the 1860s. The CD Acts allowed any woman who was suspected of being a prostitute to be legislated, policed, and held hostage by men in the medical field. As a result of the targeting of women's bodies, men and women unified to protect the rights of prostitutes against the unjust CD Act's policies. By analyzing newspapers, speeches, and essays revealing the sexist and classist ideologies supporting the CD Acts' legislation and those of its dissenters, this project will explore how men legally exercised control of women, and how those actions were justified by society's perception of medicine, policing, and the social status of its practitioners, thereby maintaining their elite status through regulation. I will also address how women and allies worked together against the CD Acts in an effort to progress women's rights. It is important to recognize the levels of bodily autonomy women have had, and why the regulation of working-class women has continued to adapt to protect men in positions of authority. This research is significant to understanding the use of women's bodies in legislation and how the CD Acts and its repeal would later work in establishing feminist movements that crossed political, class, and power boundaries.

Knuerr, Jacob

Institution: *IA - Iowa State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jacob Knuerr,
Tim Dahlstrom,
Theodore Heindel

Abstract Name: **Characterizing Sprays using High-Speed X-ray Imaging and Image Analysis**

Sprays are commonly found in many industrial applications, from chemical applications for agricultural use to fuel injection in gas turbine engines to powder formation for 3D printing. Spray characteristics can easily be assessed in the mid- and far-field regions, well after liquid sheet breakup and droplet formation, using various optical/laser diagnostic techniques. The conditions in the near-field region can influence mid- and far-field characteristics; however, near-field measurements are extremely challenging because the spray in this region is typically optically dense where optical/laser diagnostics are ineffective. X-ray imaging is one technique that can be used to view inside the optically dense region. In this study, high-speed X-ray images are captured of an airblast coaxial two-fluid atomizer, and then image analysis is completed to characterize the spray operating under different flow conditions. It will be shown that an unstable crown forms at high gas flow rates, and flapping frequency and intact length are influenced by momentum flux ratio, gas-liquid swirl ratio, and ambient pressure.

Kobaly, Angel

Institution: *PA - Westmoreland County Community College*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Angel Kobaly

Abstract Name: **Minorities in the Healthcare System: By Angel Kobaly**

Under the Human Rights Laws, everyone has the right to proper healthcare. It is known that minorities are treated unfairly in the healthcare system. Not having access to proper healthcare can cause long-lasting physical and emotional effects. Black women have always been treated differently from their white counterparts. Infants born to black women are twice as likely to be born stillborn than their white counterparts. Transgender people face insurance conflicts because some insurance compaines don't cover Gender Conformation Surgery they see it as a cosmetic. Not the life changing surgery it is. Gay men are also affected by unfair treatment in the healthcare system. Since 1978, 40.1 million people have died from AIDS/HIV related illnesses since the epidemic began. People died from it because they didn't seek out medical treatment in fear of judgment from professionals. Being gay in the 1980's was very frowned upon, so many of men suffered in silence. Hispanic people are also a minority affected by unfair treatment, they are also some of the highest people to not have health insurance. In regards to the mental health aspect of unfair healthcare treatment for minorities, it can make someone hostile, and increase risk of depression. People choose unhealthy ways to cope with the stress of it all, like drinking alcohol or smoking cigarettes. 54% of minorities have reported their mental health declining due to these unfair treatments. In order to show this research I plan on gathering this information by providing interview data of minorities who have had similar experiences within the healthcare system. The goal of this research is to examine these inequalities and bring more awareness to the situation.

Koch, Garrison

Institution: *PA - Moravian University*

Discipline: Mathematics

Author/Contributors:
Garrison Koch,
Nathan Shank

Abstract Name: **On the n-attack Roman Dominating Number of a Graph and the Impact of Infinite and Finite Resources**

The Roman Dominating number is a widely studied variant of the dominating number on graphs. Given a graph G = (V, E), the dominating number of a graph is the minimum size of a vertex set, V ′ ⊂ V , so that every vertex in the graph is either in V ′ or is adjacent to a vertex in V ′. The Roman Dominating function of G is defined as f : V → {0, 1, 2} such that every vertex with a label of 0 in G is adjacent to a vertex with a label of 2. The Roman Dominating number of a graph is the minimum total weight over all possible Roman Dominating functions. In this paper we analyze a new variant: n-attack Roman Domination, particularly focusing on 2-attack Roman Domination (n = 2). The n-attack Roman Dominating function of G is defined similarly to the Roman Dominating function with the additional condition that for any j ≤ n, any subset S of j vertices all with label 0, must have at least j vertices with label 2 in the open neighborhood of S. The n attack Roman Dominating number is the minimum total weight over all possible n-attack Roman Dominating functions. We introduce properties as well as an algorithm to find the 2-attack Roman Domination number. We also consider how to place dominating vertices if you are only allowed a finite number of them. Finally, we discuss the 2-attack Roman Dominating number of infinite regular graphs that tile the plane. We conclude with open questions and possible ways to extend these results to the general n-attack case.

Kocher, Martin

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Martin Kocher

Abstract Name: **Sustainability and the Salton Sea: Multi-stakeholder Perspectives on Sustainability**

Over the past several decades, the Salton Sea in southern California has suffered from environmental degradation and lack of support for remediation leading to one of the largest environmental disasters in California. This environmental disaster was caused by unsustainable agricultural and real estate practices and has widened economic and health disparities among Latino and Indigenous residents in the area. To restore the Salton Sea, multiple parties across the private, public, and non-governmental sectors are collaborating to develop sustainable solutions. Given the diversity of stakeholder backgrounds and lived experiences, a constructivist approach was used to understand how Salton Sea stakeholders conceive of sustainability. Data gathered from recorded meetings and in-person interviews were analyzed to characterize stakeholder conceptions of sustainability. Findings from this study are then applied to inform a multistakeholder framework for sustainable development. This study is particularly relevant to the United Nations Sustainable Development Goal (SDG) 17, Partnerships for Implementing Sustainable Development. If multistakeholder partnerships are to succeed, then understanding various conceptions of sustainability among parties is critical to identify shared interests and to support collaborative decision-making.

Koehler, Hailey

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Hailey Koehler,
Jenna Trzebiatowski

Abstract Name: **Mechanical Properties of Organic-Inorganic Composite Films: Comparing the Impacts of Flexible vs. Rigid Organic Components**

A series of organic-inorganic composite films composed of alkanethiol-capped gold nanoparticles and dithiol crosslinking molecules were assembled upon the air-water interface within a Langmuir trough. The mechanical properties of films containing conformationally flexible alkanedithiols were compared to those containing rigid bi- and terphenyl dithiols via measurement of minimum collapse pressures. The results of this study address the specific role of nanoscale materials components,further enabling the rational design of nanoarchitectures with specific chemical, physical, and mechanical properties.

Koehler, Scotlyn

Institution: *OK - Cameron University*

Discipline: **English/Linguistics**

Author/Contributors:
Scotlyn Koehler

Abstract Name: **Testament of Youth: The World War I and Women**

This presentation discusses how Vera Brittain's experiences in the First World War reshaped her feminist perspective and helped develop her pacifistic views in her memoirTestament of Youth. The presenter argues that having worked as a nurse during World War made Brittain an advocate for changes against entrenched and archaic gender norms based on Victorian values that treated women as children and made them feel incompetent. Furthermore, the presenter maintains that Brittain's experiences in WWI also helped develop her pacifistic views, as she openly expressed her opposition to killing, warfare, and violence and ultimately became a strong proponent for peace to prevent wars from recurring or breaking out again. Finally, the presenter argues that one insight we can draw fromTestament of YouthbyVera Brittain is that we should all stand up against any war because war is "pointless and the sacrifice of life and property benefited none of the countries involved." Let's help stop all the wars in our contemporary time!

Koepke, Duncan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Mathematics**

Author/Contributors:
Duncan Koepke

Abstract Name: **Codebook Creation for Partial Correction**

In coding theory, a multiple access channel is one where the messages of two or more senders are combined and then sent through a channel for a receiver to decode. After the senders select their message, there is a window for a malicious adversary to act. Over particular multiple access channels, it is theoretically possible to reliably correct one sender's message. We investigate code design for this scenario.

Kokal, Sara

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Sara Kokal

Abstract Name: **Review on Usage of Deep Learning and Machine Learning Algorithms with Behavioral and Physiological Biometrics based Smartphone Security**

Throughout the past decades, mobile devices have evolved in capability and popularity at growing rates while improvement in security has fallen behind. As smartphones now hold mass quantities of sensitive information from millions of people around the world, addressing this gap in security is crucial. Recently, researchers have experimented with behavioral and physiological biometrics-based authentication to improve mobile device security. Continuing the previous work in this field, this study identifies popular dynamics in behavioral and physiological smartphone authentication and aims to provide a comprehensive review of their performance with various Deep Learning and Machine Learning algorithms. Throughout this paper, the benefits, limitations, and recommendations for future work will be discussed.

Kolahdouzan, Kian

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Kian Kolahdouzan

Abstract Name: **The Role of Transcriptional Regulator MeCP2 in Motor Learning and Memory in Mouse Model**

Methyl CpG binding protein 2 (MeCP2) is an X-linked methylated DNA-binding transcriptional regulator that plays a role in the epigenetic regulation of many genes. The loss of regulation due to the lack of MeCP2 is involved in many Rett syndrome (RTT) symptoms, including motility deficit, epileptic activity, and cognitive dysfunction. However, the effect of MeCP2 in motor learning is not well defined. We hypothesize that knocking out MeCP2 in mice interferes with motor learning capabilities. This hypothesis will be tested by performing the following experiments: (1) I will use transgenic MeCP2-knockout mice to determine the pellet-reaching capability and compare these results to a wild type control group of mice; (2) I will use pharmacological, optogenetic, and immunofluorescent approaches to examine the behavioral and cellular consequences of knocking out MeCP2. Motor learning paradigms will be performed, including accelerating rotarod and single pellet reaching tasks. These results will provide novel information regarding the role of MeCP2 in motor learning, uncovering fundamental brain mechanisms involved in the processing and integration of motor learning capabilities in the motor cortex. The results from the proposed experiments will expand our understanding of neurodevelopmental diseases and many other disorders that affect motor learning, including Parkinson's disease, Huntington's disease, Rett syndrome, and Tourette syndrome.

Koller, Ann

Institution: *MN - St. Catherine University*

Discipline: **FAN Abstract**

Author/Contributors:
Ann Koller,
Katherine A Campbell

Abstract Name: **Building Belonging and Creating Community: Intentional Alignment of Research Programming at a Women-centered, Minority-serving Institution**

St. Catherine University is a women-centered, minority-serving institution located in Saint Paul, MN. As a University founded by and for women, our collaborative research programs aim to build a supportive scholarly community and provide robust year-long research opportunities to underrepresented students. Two such examples of complementary programs that work to build scholarly identity among our students are the Summer Scholars Program and the Assistantship Mentoring Program (AMP). Both programs foster mentored research through funding collaborative projects between faculty and students across any department within the College for Women - either through 20 hours/week for 10 weeks in the summer or through 10 hours/week for one or more academic semesters. Students in both programs participate in additional professional development and all opportunities are compensated to provide accessibility and sustainability. Notably, recent data indicate an increase in student retention following engagement in mentored research with AMP students demonstrating an average 98.2% return rate to the university in the past two academic years. This return rate is 8.5% higher than the overall University rate of 89.8% during this same timeframe. Through a short talk about our collaborative research programming and University-wide research infrastructure, we hope to engage audience members in a discussion of best practices that build identity and belonging among underrepresented women in research.

Kolodjski, Sierra

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Yihong Deng,
Sierra Kolodjski

Abstract Name: **Development of Whey Protein-Lignin Based Film Materials for Food Packaging Applications**

Whey protein (WP) and lignin are by-products of cheese industry and the pulp and paper industry, respectively. This project aims to combine WP, glycerol, and lignin to develop biodegradable films with improved water barrier and mechanical strengths for food packaging applications. Reconstituted WP solutions (6% w/v) were held in a water bath with glycerol and lignin (if applicable) at different temperatures (60-95°C) for 30 mins to induce different levels of WP denaturation.SDS-PAGE showed that the film-forming solution prepared at 90°C for 30 min resulted in 88.7% WP denaturation, while it was only 12.3% for WP prepared at 60C for 30 min. Further results revealed that WP denaturation increased available thiol groups, which were likely responsible for forming the polymeric structure of WP films. With altered polymeric structures, different levels of WP denaturation altered film properties such as film thickness, water vapor permeability (WVP), and water solubility. Both WVP and water solubility were inversely correlated with the percent denaturation of WP.WVP of 60°C and 90°C WP films was 2.20 ± 0.34 mg·m-1·hr-1·kPa-1 and 1.83 ± 0.41 mg·m-1·hr-1·kPa-1, respectively. WVP of 20°C film could not be measured as the film started to rupture within 3-4 hrs of the WVP measurement, indicating its inability to block moisture due to its extremely hygroscopic nature. As for water solubility, 20°C and 60 °C WP films were completely dissolved within 24 h, whereas the water solubility of 90°C WP films was 58.36%±1.8% after 24 h. The results indicate that WP denaturation is critical to the properties of the resultant WP films. Lignin-incorporated WP films are prepared and currently being tested to study the effects of different types and concentrations of lignin on improving film properties, especially mechanical strength, light barrier and antioxidative properties.

Kolodjski, Sierra

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Sierra Kolodjski

Abstract Name: **Aquafaba Characterization and Evaluation**

Eggs are nearly ubiquitous in American households. They serve as a source of protein and other nutrients. For baking, eggs often serve as an emulsifier, a stabilizer, a binder and a foaming agent. However, eggs are a major allergen, and with many consumers opting for a plant-based diet, the demand for plant-based egg substitutes has grown. Aquafaba has emerged as a possible alternative for eggs. Aquafaba, latin for “bean water” typically refers to the brine from cooked chickpeas. Intriguingly, aquafaba exhibits foaming and emulsifying properties similar to eggs. Recent research into aquafaba has focused on optimizing its properties and applying it in recipes that would traditionally include eggs like sponge cake, meringues, and mayonnaise, but there is still much to be known about this fascinating food ingredient. One issue that emerges in the literature is the important of standardization, and in particular the many factors that affect the composition and performance, and the need for a method to characterize the aquafaba composition to predict performance, which will be important for the implementation on a commercial scale. In this study, aquafaba is characterized using size-exclusion HPLC and correlated to foaming capacity in order to both create a method that can accurately and efficiently characterize the protein composition of aquafaba, and to understand how the composition indicates performance. Multiple brands of the brine of canned chickpeas were analyzed in addition to prepared aquafaba with varying cook times. Using these methods, qualitative and quantitative data was collected about the types of proteins and other compounds present, and the specific role of high molecular weight proteins on foaming was examined.

Komoszewski, Katie

Institution: *MN - University of Minnesota - Rochester*

Discipline: **Biology**

Author/Contributors:
Katie Komoszewski,
Chinwe Obi,
Sam Waldron,
Olivia Kressin,
Brittany Brown,
Angela Gupta,
Rachel Olson

Abstract Name: **Impact of invasive jumping worms on soil microbial density and species composition**

In 2019 non-native invasive species of earthworms were identified in Minnesota (Amynthas sp.). These worms have deleterious consequences on farm, forest and garden ecosystems with no scientifically identified solutions. We aimed to examine jumping worm impact on microbial density and species composition. Soil samples with and without jumping worms were sampled in Rochester, MN locations during winter and summer seasons. Using 16S rRNA microbial communities were characterized. Using standard techniques including serial dilutions and viable plate counts, microbial colony forming units were estimated. Our results indicate that bacterial colony forming units were greater in soils with jumping worms. In addition, species composition varied between soils with and without jumping worms.

Kondragunta, Vinata

Institution: *VA - Virginia Commonwealth University*

Discipline: **Sociology**

Author/Contributors:
Vinata Kondragunta

Abstract Name: **Familial Conflicts of Second Generation Indian Women in Interracial Marriages**

In the United States, the rates of interracial marriage have grown in most cohorts due to the growingly progressive nature of our society. However, that is not a comfortable reality for many second-generation Indian American women living in the United States. After a review of the literature it has been examined that due to the remaining presence of ideologies from the Indian caste system, which promote staying in ones social class, the majority first-generation Indian parents actively discourage interracial marriage. One reason is that parents believe that if their children marry someone from a different race or caste, their children's offspring will be less culturally Indian causing them to experience cultural dilution, which will eventually lead to the culture's extinction. A study conducted on Asian-American women found that due to the difference in cultural ideologies between parents and their children it has caused familial conflicts. The biggest cultural difference is that first-generation Indian parents have grown up in India, a collectivist society that promotes prioritizing one's family and family values above all else, compared to second-generation children who have grown up in an individualistic society like the US where their needs and wants are prioritized. As a result of the disparities between the two cultures, second-generation Indian women are more likely to face depression and anxiety due to the pressures they face from their parents to maintain traditional norms. Despite this, there has still been a raise of Indian women entering interracial marriages because they have grown up seeing interracial marriage as something that is a cultural norm even though it goes against their parent's beliefs. By further studying women who have entered marriages their parents were against, it opens the possibility to more research regarding the differences between second-generation women in interracial marriages versus intraracial marriages.

Kondro, Beth

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Emma Loucks,
Sean Babasin,
Jordan Deau,
Beth Kondro,
Michael Holly

Abstract Name: **Low Cost Filter Media for the Removal of Phosphorus in Agricultural Runoff Treatment Systems (ARTS)**

Seasonal hypoxia of lakes in the Midwest, Gulf of Mexico, and surface waters around the world as a result of excessive algal production, has a detrimental effect on the local aquatic species, environment, and recreation. Despite investments in point source reductions, seasonal hypoxia is persistent, in part due to non-point agricultural sources of phosphorus (P) (35% of total P load to Lake Michigan). Agricultural runoff treatment systems (ARTS), consisting of sedimentation basins and phosphorus removal structures, are an effective field treatment to reduce nutrient pollution .pollution. Numerous media (>80) for phosphorus removal structures have been investigated for their P removal potential and the hydraulic conductivity; Ca, Fe, Mg and Al content of media are important factors. Reactive media derived from waste products would create a product from waste, extending time prior to disposal, supporting a circular economy. Waste residuals (e.g. drinking water treatment residuals, wood waste, vegetative waste) will be modified (through metal additions, heat treatment, pelletizing, and binder addition) for and evaluated for dissolved P removal from agricultural runoff.. Treatment potential of modified waste media will be measured using flow through lab scale reactors constructed out of 0.75-inch diameter PVC pipe. Columns will be completed in triplicate for each media. Influent and effluent samples will be collected every 5 to 10 hours until effluent P is >50% of influent P. Ortho-phosphorus will be measured in collected samples using a discrete analyzer (Seal AQ300) at UWGB. Media will be designed to maximize P sorption capacity, hydraulic conductivity, mechanical strength, efficacy in high flow systems (< 10 min retention times), and reuse potential; minimize toxic side effects, energy consumption, and cost, critical to

Korb, Jacqueline

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **Biology**

Author/Contributors:
Jacqueline Korb,
Jennifer Bray,
Sol Sepsenwol,
Michael Steury

Abstract Name: **Perfusion-Fixation Protocol for TEM Imaging of Brain Tissue in Mice**

Proper fixation is critical in transmission electron microscope (TEM) studies because of the artifacts created in poorly fixed (i.e., dying) tissues. This is especially true with brain tissue, due to the fatty myelin of the brain. To prevent tissue breakdown from lack of oxygen and nutrients, perfusion fixation must be used to rapidly and completely fix the tissues for high-resolution TEM images. Briefly, perfusion fixation is a method of circulating fixative via the circulatory system. It consists of replacing the blood of a deeply-anesthetized animal with physiological saline via the heart, then replacing the saline with fixative — in this case, a mixture of paraformaldehyde and glutaraldehyde. These trials have been conducted to refine the mouse perfusion fixation technique in brain tissue. The subsequent preparatory steps — post-fixation, dehydration, embedding in plastic, thin-sectioning, and staining — are all well-known. Using the optimized perfusion-fixation protocol, we obtained high-resolution TEM images of the hippocampus and cerebellum from mouse brain. Future studies will use this technique to determine the effects of acute colitis on the ultrastructure of the hippocampus and cerebellum in mice. Previous studies of acute colitis in mice demonstrated that biochemical compounds from the inflamed intestinal tract induce important pathophysiological changes on the brain, most notably, the brain vasculature. This protocol will serve as a method to visualize and characterize the vascular, neuronal, and glial cell changes within the hippocampus and cerebellum of animals with induced colitis. The information from this work may contribute to effective therapies for colitis-related diseases.

Koren, Annat

Institution: *CA - City College of San Francisco*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Annat Koren *Hunter Ireland* *Eryn Jagelski-Buchler*
Sandra Luo *Edoardo Serra* *Francesca Spezzano*

Abstract Name: **Adversarial Analysis of Fake News Detectors**

In recent years, machine learning models have been developed to mitigate the problem of fake news. One example is dEFEND, a state-of-the-art natural language processing (NLP) model that utilizes news contents, comments, and the relation between the two to detect fake news. We aim to expose vulnerabilities in the model so that it can be strengthened against attempts to use manipulated data to mislead it.Attacks on fake news detection models are a growing concern and an active area of research. One product of this is MALCOM, a malicious comment generator that ostensibly forces misclassifications of news with success rates upwards of 93%. MALCOM generates stylistically similar and topic-relevant comments to the input text, alleviating common problems with attacks on NLP models (e.g., producing nonsensical examples). However, these comments are recognizable as being computer-generated. We instead use real comments from the same dataset, so that they are indistinguishable from the rest. This approach aims to match Le et al.'sresults in a less complex and computationally expensive way.Using the FakeNewsNet dataset, we develop an attack by grouping articles and their preexisting comments into topics, and then computing their pairwise similarity. This enables us to identify both generic and topic-specific comments that can sway dEFEND's classification of an article. For comparison, we implement CopyCat, a baseline attack used by Le et al.that randomly selects comments from relevant articles. Attack success rates – the percentage of time an attack fools dEFEND into misclassifying an article – indicate that our novel attack techniques outperform our implementation of CopyCat in most cases (Table 1).An ongoing area of research is creating a defense to mitigate these attacks, e.g., by filtering comments post-training, based on properties identified as being adversarial.

Koroma, Mariam

Institution: *MD - Bowie State University*

Discipline: **Biology**

Author/Contributors:
Mariam Koroma *Anne Osano* *Elizabeth Arnold*

Abstract Name: **Unraveling the metabolite richness of underexploited Amaranth using Metabolomic approaches.**

The United Nations designated grain amaranth (Amaranthus spp) as "The Future Crop." This plant has been overlooked and undervalued yet the grain amaranthis a leafy vegetable with a lot of health-promoting properties and therefore cannot be overlooked at a time when gluten-free, protein-rich, high-fiber and high nutritional qualities are becoming attractive labels in supermarkets throughout the world. The plant is reported to have anticancer, antivirals, and antioxidants properties. Documentation on environmental effects on secondary metabolites profiles in amaranth is missing. Symbiotic endophytes associated with plants are known as resources of novel metabolites. Fungal endophytes of the Amaranthaceous family have received inadequate attention. We hypothesis that endophytes contribute to the synthesis of metabolites in the amaranth plant. The objective of this research was therefore to isolate the fungal endophytes from different tissues of grain amaranth and use metabolomics approaches to understand the role the endophytes play in metabolite synthesis. The further objective was to study the effect of the environment of metabolite synthesis in Amaranthus. Plant samples were collected from Africa and different states in the USA. Metabolomics approaches of High-Performance Thin Layer Chromatography (HPTLC) and Proton Nuclear Magnetic resonance (1H-NMR) were used for the analysis of metabolite components. The HPTLC results showed the presence of flavonoids in the leaves. The endophyte study revealed fungi in the stalk (Fusarium spp) and the leaves (Fusarium spp) and (Eppicoccum spp). The metabolite rutin was detected in modest amounts from NMR results. More studies are ongoing on the role of endophytes on metabolite synthesis in grain amaranth. This research was completed over the summer of 2021 at Bowie State University under the supervision of Dr. Anne Osano, Dr. Elizabeth Arnold of the University of Arizona, and Dr. Eike Reich of the HPTLC Association.

Korpontinos, Chris

Institution: *CA - California State University - Channel Islands*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Lendin Stell Santiago,
Chris Korpontinos,
Gareth Harris

Abstract Name: **Characterizing novel mechanisms underlying serotonin dependent influences on behavior**

Mood disorders, such as depression, affect over 40 million people in the US. Despite the use of an array of therapeutics for mood disorders, current understanding of the mechanisms underlying these processes and the specific targets of each therapeutic remains unclear. This results in variable success of the existing treatments, along with very little specificity toward an individual. More recently, there has been a deeper focus on understanding serotonin targets involved in mood and mood disorders. We use the nematode, Caenorhabditis elegans, to investigate the behavioral effects of serotonin and the neural mechanisms and intracellular pathways that mediate serotonin's effect on the brain. Our present study specifically investigates, 1) the novel targets of serotonin, and 2) how serotonin-dependent behaviors may vary across different species within the Caenorhabditis genus. We have found that known serotonin effects on worm behaviors including paralysis and stimulated egg laying, were significantly different across worm species that originate from distinct geographical locations. This implies the possibility of characterizing intracellular pathways and the factors that contribute to the differing behaviors, to understand the extent of pharmacological drug specificity toward an individual suffering from mood disorders. In further research, we intend to discover the targets of serotonin in nematodes across different genera to assess the fundamental variation in the alternate behavioral responses to both serotonin and serotonin targeting therapeutics, which continues to be of high importance in understanding human neuropsychiatric disease, like depression, addiction, and bipolar disorder.

Korrapati, Anantha

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Anantha Korrapati *Briana De Miranda*

Abstract Name: **Heavy Metal Exposure Induces Senescence as a Mechanism of Dopaminergic Neurodegeneration in a Parkinson's Disease Model**

Parkinson's Disease (PD) is the most common movement disorder, affecting over 10 million people worldwide. It is marked by dopaminergic neuron loss and alpha-synuclein (αSyn) aggregation, but 90% of diagnoses do not have a known cause. Environmental exposures may play a role as heavy metals have been epidemiologically implicated in the etiology of neurologic diseases of aging such as Parkinson's Disease. Despite this well-known connection, the mechanisms behind metal-induced neurodegeneration remain unclear. Work from our lab suggests that a common feature of toxicant exposure in neurons is the induction of cellular senescence, which accelerates aging, promotes inflammation, and impairs protein degradation. We hypothesized that environmental exposure to heavy metals induces senescence and its negative effects.To assess this, we used an in vitro platform within the dopaminergic neural N27A cell line that express human αSyn, and treated neurons with 5 μM manganese (MnCl2), 2.5 μM lead (PbNO3), or vehicle for 24 hours. Using immunocytochemistry, we detected significantly elevated levels of p21, a senescence cell-cycle regulating protein, in dopaminergic neurons following both manganese and lead treatment (0.0001). As senescent cells are reported to have autophagic impairment, we assessed lysosomal function via the Lysosomal Membrane Associated Protein (LAMP)-1, which was significantly decreased following manganese and lead exposure (0.0001). Furthermore, we observed an accumulation of αSyn within N27A cells, suggesting that heavy metal-induced senescence caused a reduction in protein degradation pathways that promoted αSyn aggregation.Together, these data suggest that heavy metal may induce senescence and accelerate neurologic aging and neurodegeneration. These data indicate that inhibition of senescent proteins such as p21 may be effective at protecting neuronal damage from exposure to heavy metals such as manganese and lead. Experiments to block senescent pathways to preserve autophagy and limit αSyn accumulation are currently ongoing in our lab.

Kostuch, Dylan

Institution: *WI - University of Wisconsin-Stout*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Dylan Kostuch *Kal Breeden* *Britney Serafina,*
Keith Gilland *Innisfree McKinnon* *Nicole Hayes*

Abstract Name: **Cyanobacterial Harmful Algal Blooms and Phytoplankton Nutrient Limitation in a Pair of Hypereutrophic Reservoirs in the Red Cedar River Watershed**

Eutrophication and the proliferation of cyanobacterial harmful algal blooms (cHABs) are a significant problem in the waters of Wisconsin. In western Wisconsin, a history of intensive agriculture and naturally occurring phosphates in rocks lead to an overabundance of nutrients in lakes supporting an overgrowth of cyanobacteria in many reservoirs. Cyanobacteria produce toxins that are hazardous to human and pet health and limit recreational activities in lakes with blooms. To manage waterbodies for improved water quality and reduced cHABs, it is critical to identify whether phosphorus or nitrogen needs to be reduced to limit phytoplankton growth. Lakes Menomin and Tainter located near Menomonie, Wisconsin are hypereutrophic impoundments of the Red Cedar River. Both water bodies experience annual cHABs composed of the potentially toxin producing taxa, Microcystis spp. and Aphanizomenon spp. Watershed nutrient management in the Red Cedar River watershed has reduced the amount of phosphorus entering the lakes over the last decade but nitrogen levels are increasing. The objective of this study is to determine if cyanobacterial toxins are present in the lake and whether nitrogen or phosphorus is limiting phytoplankton growth. In the summer of 2022, a group of researchers from UW Stout conducted regular sampling of lakes Menomin and Tainter to determine how the algal blooms developed over the summer. Water was collected bi-weekly for analysis of cyanobacterial toxins and nutrient limitation status. Over the course of the summer an intense cyanobacterial bloom formed across both lakes. Ongoing data collection will allow us to gain a better understanding of the toxin dynamics in the blooms and suggest further management interventions at both the reservoir and watershed scale.

Kotak, Mit

Institution: ***IL - University of Illinois Urbana-Champaign***

Discipline: Computer Science/Information Systems

Author/Contributors:
Mit Kotak,
Kaushik Kulkarni,
Andreas Kloeckner

Abstract Name: Efficiently executing Discontinuous Galerkin Finite Element Method (DG-FEM) workloads on GPUs via data flow graphs

Numpy contains the primitives to express the computation cleanly for DG-FEM operators (typically used in electrodynamics, fluid mechanics and plasma physics workloads). However, it is not the first choice for deploying production scale applications. This is due to a combination of targeting only CPUs and under-utilizing the hardware's resources. We address these problems by developing a novel system where the user writes Numpy-like code while executing operations concurrently on a GPU. We do this by mapping the array operations onto a precise data-flow graph and exposing that to a GPU via NVIDIA's CUDAGraph API. To evaluate the soundness of this approach, we port a suite of complex operators that represent real world workloads to our framework and compare the performance with a version where the array operations are executed one after the other. To make this work accessible to a wider audience, we are in the process of integrating this into PyCUDA, a tool that has been broadly adopted across computing communities. We conclude with some insights on NVIDIA's runtime scheduling algorithm using a set of micro-benchmarks to propose a roofline-model for task-graph based parallelism on GPUs.

Kotelnicki, Emma

Institution: ***FL - The University of Tampa***

Discipline: Public Health

Author/Contributors:
Hailey Daves *Victoria Meguro* *Emma Kotelnicki,*
Olivia Osseiran *Mary Hart* *Claudia Aguado Loi*
Melissa Williams

Abstract Name: Beyond Translation: A Qualitative Inquiry Study for Refining a Culturally and Linguistically Adapted Health Coach Intervention for Latina Breast Cancer Survivors

Background: Latina breast cancer survivors historically lack linguistic and culturally tailored coping and management interventions. Traditional adaptation of English education materials for a Latina audience often address surface cultural features such as language, but lack nuances garnered through formative research with the target audience. This study implemented a collaborative community-academic partnership to develop a multi-module health coach intervention and coinciding workbook tailored to the needs of Latina breast cancer survivors (LBCS). All materials used in development were adapted from nationally recognized guidelines for cancer survivors. Thus, this study aimed to gather qualitative data assessing cultural relevance of the transcreated (translated + culturally adapted) health coaching intervention for LBCS. Methods: Following best practice for cultural adaptations, English materials were reviewed by cancer survivorship experts and transcreated into Spanish. Two focus groups (6-8 participants each) were held in Spanish to assess the cultural relevance of the transcreated materials to LBCS. Focus group guide questions were informed by two theories (Social Cognitive Theory, Help-Seeking Behavior Model), learner verification (a methodological approach for education message design). Guide also included questions on feasibility. Transcripts were translated into English and analyzed using thematic analysis. Community expert review confirmed findings.Results/Discussion: Emerging themes included content relevance, applicability, saliency of messages for comprehension, and areas for further refinement.Verification checks with our community partner confirmed content revision and solutions for incorporating participant feedback in future implementation. Data from focus groups allowed for further verification of acceptable content and method expansion prior to piloting with LBCS as a final refining step in the transcreation process. Conclusion: Reflection of cultural reality during program development is crucial for intervention adaptation in diverse populations while building social capital. Transcreation allowed for a collaborative process guided by the integration of cultural nuances, while participant first-hand experiences led modules toward cultural accuracy.

Kothari, Anusha

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Anusha Kothari

Abstract Name: **Transforming Taboo: Discursive and Generic Uptake in South Asian Mental Health Recovery Narratives**

Mental health in South Asian communities is urgent, unaddressed, taboo, and needs further study. Studies show that South Asian immigrants across ages and genders are disproportionately affected by depression, anxiety, insomnia, and eating-related psychopathology (Karasz et al., 2019). According to the South Asian Public Health Association, 1 in 5 US South Asians report experiencing a mood or anxiety disorder in their lifetime. A review of relevant research identifies finding culturally sensitive approaches as a pressing need (Karasz et al., 2019). Developing a culturally-relevant approach, however, requires understanding the lived experiences of members of that culture. The mental health recovery narrative genre, an emerging variation on the illness narrative, provides one record of these lived experiences. Illness narratives have been studied by medical anthropologists like Arthur Kleinman (1988), who writes that they intimately share the "innately human experience of symptoms and suffering" (p. 3) which is "culturally shaped" (p. 5). With this understanding, my research asks what mental health recovery narratives from South Asian communities can reveal about the South Asian mental health crisis. This presentation will share my genre analysis of eight samples of South Asian mental health recovery narratives from the platform Mann Mukti, meaning mental liberation in Hindi. Taking a rhetorical genre studies lens, my research identified five recurring rhetorical themes and moves: the regaining of control, call to actions, enargia, the completeness of narratives, and anonymity. These patterns are especially meaningful when interpreted through the South Asian cultural context, including collectivist culture, immigration and globalization struggles, and other factors contributing to mental health stigma. Overall, I argue that this genre has transformed a personal need to be heard empathetically and uninterruptedly into a recurrent social exigence recognizable to other South Asians. Ultimately, it is a hopeful genre communicatinga culturally situated solution for a seemingly intractable problem.

Kowalkowski, Brinley

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Business

Author/Contributors:
Brinley Kowalkowski *Emily Brosig* *Simran Challana*

Abstract Name: **The Effects of COVID-19 on College Students: Pre- and Post-Vaccine**

This research examined the impact of COVID-19 on college students resource loss and stress levels by offering a comparison across pre- and post-vaccine phases of the pandemic. Two research studies will be presented.In spring 2021 (n=155) and spring 2022 (n=256), business school students completed an online surveyassessing their resource loss, stress, physical and psychological health, well-being, academic performance and moreduring the global COVID-19 pandemic. In support of COR theory, the 2021 "results demonstrated that students with lower resources (i.e., lower socioeconomic status) reported significantly more resource loss; increases in resource loss were significantly associated with increases in stress; and stress was significantly and negatively related to physical health, psychological health, and well-being. Reevaluation of resources served as a buffer in the relationship between resource loss and stress." (Murphy et al., 2022, p. 125-6). The 2022 post-vaccine resultsshowedcollege students reportedover<u>five</u>fewer resource losses, but thesame levels of stresscompared to the pre-vaccine sample. In support of hypotheses from Hobfoll's (1989) Conservation of Resource (COR) theory as well as Hobfoll and Lilly (1993) work on types of resources, students reported a negative impact on stress and resource loss from the COVID-19 pandemic regardless of vaccination status. Further, the effects were more negative for females than males as well as for upper-class students (juniors, seniors, super seniors) compared to lower-class students (freshmen, sophomores). This is one of the first studies to test the differential impact of resource type (personal characteristics,conditions,energiesandobjects) on the relationship to stress – finding thatpersonal characteristicswere the key component explaining most of the variance in stress. Overall, this is the first series of studies to explore the effects of resource loss or gains at two critical points in a global pandemic.

Kozlowski, Collin

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Collin Kozlowski,
Naeem Seliya

Abstract Name: **A Brief Literature Review in Deepfake Detection**

In recent years, fake news and false information in media has become an incredibly important and threatening issue in society. Deepfakes, a relatively new type of fake media, have emerged as a major contributor to that threat. The creation of deepfakes utilizes deep learning techniques to create realistic fake videos or images. These deep learning-based deepfake generation models can combine, merge, replace, and alter videos of people to create fake versions that are difficult to distinguish from real videos. The core threat of deepfakes is that they give anyone the ability to portray someone doing or saying anything without their consent. To combat this, extensive research into deepfakes and the creation of deepfake detection models has been conducted by various universities, major technology corporations, and independent teams.In this project, we conducted a literature review of 21 deepfake detection papers. We provide a summary of each method along with advantages and constructive critiques. The methods reviewed all use machine learning techniques with many using more specific types of machine learning such as deep learning and statistical learning. With our review, we seek to analyze the recent status of deepfake detection research. Most of the literature works we reviewedapproach the detection task using deep neural networks which achieve high performance scores but suffer from high complexity and poor generalization ability. We also noticed a lack of a benchmark datasetand evaluation system which makes comparing models difficult. Almost all the literature covers video and/or image deepfakes but does not consider audio fakes. In addition to these findings, we also provide suggestions for future research such as creating a benchmark evaluation system and focusing on generalization.

Kpankpa, John

Institution: *PA - Pennsylvania State University*

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
John Kpankpa *Eliza Albenze* *Mauro Nardon*
Tarkeshwar Singh

Abstract Name: **The effect of mechanical perturbation on rapid goal-directed interception task**

Most people perform daily tasks through dynamic coordination of their eyes and hands while maintaining posture. For example, catching a pass during a game of football, grabbing a rebound during a game of basketball, or catching a bouquet of flowers at the end of a wedding night.During instances where an opponent provides a mechanical disturbance, our visuomotor system must make rapid adaptations to successfully achieve the desired goal. However, how the visual and motor system coordinate to intercept a moving target after a mechanical disturbance of the upper limb while upright is not well understood. In this study, we investigated the long-latency reflex (75-110 ms for upper limb and 75-119 ms for lower limb) effect on visual processing and whole-body balance through a goal-directed reaching and interception task with mechanical perturbation of the upper limb. Participants used a robotic manipulandum (KINARM) to reach a stationary target or intercept a moving target while standing on a force plate sensor. The force plate measuresground reaction forces to quantify balance and helpsus understand postural sway through the center of pressure (COP). On some trials participants experienced a force towards or away from them as they performed a reaching movement. We hypothesized that there is a distinct difference in the relationship between saccadic (fast) and smooth pursuit (slow) eye movements on muscle activation of the upper and lower limbs when there is a mechanical perturbation. Our initial findings show that COP begins to shift 80-100 ms before movement onset as anticipation for movement. We also found that across 4 random successful trials the average points of interception occurred 570 ms from target onset and 13.35 cm from the point of fixation. We expect to find a strong correlation between eye movement speed and the long-latency reflex.

Kracht, Jasen

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Jasen Kracht

Abstract Name: **Dominus Vobiscum: Ritual Experience and Engagement Among Converts to Catholicism**

A great deal of work has been done within cultural anthropology studying religious ritual, but comparatively little of this has focused on the ritual experiences of converts to the Catholic Church. Such converts enter the Church with a range of ritual and religious backgrounds which have the possibility of impacting how they view ritual within a Catholic context. The unique perspective of converts in this realm, drawn from multiple ritual vantage points, is particularity instructive regarding how ritual experience changes over time. This project will focus on how converts to Catholicism experience and engage with ritual with a special emphasis being paid to the Mass. When applicable, their previous ritual experience will be brought in as a point of comparison regarding change in ritual experience and its effects on ritual engagement. This project will use data collected from participant observation, surveys, and semi-structured interviews. Data will be collected primarily at two Catholic churches in La Crosse, Wisconsin, although given the scope of the research, data from other Catholic sites in Wisconsin will not be excluded. The experiences of converts to Catholicism, particularly the comparisons and contrasts between their current and previous ritual experience and engagement, provide a unique emic perspective on comparative ritual study that hasnot been, as of yet, explored in depth. Thus, this paper will offer, through its analysis of ritual participation among converts to Catholicism, a window into such emic perspectives that can give valuable insight into how ritual is experienced and engaged within religious communities.

Kraft, Alyssa

Institution: *WI - Marquette University*

Discipline: Physics/Astronomy

Author/Contributors:
Alyssa Kraft,
Patricia Vushaj,
Kyle Hudson,
Brian Bennett

Abstract Name: **EPR Characterization in the Liquid Solution Phase of Isomeric Copper-Bound Linkage Isomers with Anti-Cancer Activity.**

Two isomeric linkage isomers of Cu(II) complexes with phenylglyoxal bis(ethylthiocarbamate) with equatorial CuN2S2 coordination are differentiated by liganding via either a 4-, a 5- and a six-membered chelate ring (L3) or three 5-membered chelate rings (L4) (Inorg. Chem. 2022, 61, 7715-7719). Both isomers exhibit qualitatively similar but quantitatively distinct preferential antiproliferation activity towards lung adenocarcinoma cells (EC50 ~ 0.1 mM) compared to non-malignant cells (EC50 ~ 1 - 2 mM). Here, electron paramagnetic resonance (EPR) was employed to answer some outstanding questions: (i) How do the electronic structures of the isomers differ? (2) Do the physical and electronic structures of the isomers in liquid solution correspond to those in the solid and frozen solution states? (iii) Do the isomers interconvert under mild conditions in liquid solution? (iv) Are the electronic and/or physical structures affected by the nature of the solvent or detergents? The study additionally prompted a critical evaluation of methods for simulating EPR spectra with high anisotropy in g and A in the liquid phase and the effects of viscosity on the line shapes.

Krambeer, Laura

Institution: *IL - North Central College*

Discipline: World Languages

Author/Contributors:
Laura Krambeer

Abstract Name: **National Socialist Propaganda in the Third Reich: The Iconography of Youth**

The National Socialists used many tools in their rise to power, but among the most important to both achieving and maintaining their power, was propaganda. One of the previously unexplored facets of this propaganda is the regime's manipulation of the iconography of German youth as a means to achieve the goals of their propagandistic messaging. These adolescents were both a valuable target and symbol for the National Socialists to use to further the guise of their control. All in one, this population was the tool and object of National Socialist violence. They became the propagandistic tool with which party leaders maneuvered German adults into conforming while simultaneously being the generation that could be molded into this same form from their inception. The goal of the party was to form this next generation's mind and body -- to take them from the meek and timid creatures which they were depicted as for their parents' sake, and turn them into the ideal battle-ready, obedient youth they were depicted as to entice them into the service of der Führer. Children were the perfect vessel with which the National Socialists could mask their insidious agenda of racial hygiene behind the guise of "protection". In many cases, the party would be depicted as a "protector" keeping the ideal German family or child(ren) safe from the impending doom of the other. In this way, children had become both a weapon of objective violence and the victim of subjective violence -- as defined by Slavoj Žižek. Using a compilation of the party's propaganda posters, video footage depicting Hitler Youth organizations' activities, and informed by the tactics of the National Socialist Party and Slavoj Žižek's works, I have crafted a critical analysis of German youth's role in the propagandistic success of the Third Reich.

Kramo, Moya

Institution: *NC - Western Carolina University*

Discipline: English/Linguistics

Author/Contributors:
Moya Kramo

Abstract Name: **A Quill in Honor of The Nation: Rustaveli's Knight in the Panther Skin and Whitman's Starting from Paumanok**

The Georgian poet, Shota Rustaveli, and the American Romantic writer, Walt Whitman,celebrate and discuss the identity of their countries, in their respective poems The Knight in the Panther Skinand "Starting from Paumanok."Rustaveli's use of Georgian rather than the dominant languages of the12th century, such as Latin, suggests his devotion to his country. The two protagonists, Avtandil and Tariel, are imbued with the core Georgian values of friendship, heroism, and true love. Belonging to different kingdoms, these knights develop a strong bond through the similarity of their stories and display their willingness to sacrifice for their belovedroyals,Tinatin and Nestan-Daredjan. The empowerment of women in Rustaveli's poem reflects the reign of Georgia's first female monarch, King Tamar, during the country's Golden Age. Rustaveli also mentions God and the Christian values that inspire his compatriots. Similarly, "Starting from Paumanok" exhibits Whitman's patriotism. He wants his poetry to be democratic and accessible to all, regardless of social status. Although aware of the individual nature of human beings, he is sensitive to their interconnectedness, hence his desire to write about the whole rather than the parts. As Whitman recognizes the diversity of America, his verse is inclusive, as exemplified by the use of"Paumanok,"which is the Native American name for Long Island. He also explores the ideals upon which his country was founded and emphasizes one of the essences of America, democracy. Furthermore, "Starting from Paumanok" praises the resources with which America is naturally endowed while acknowledging the imperfection of theUnited States. By successfully highlighting the cultural identityand uniqueness of their homelands, Rustaveli and Whitman become revered national bards whose works transcend the boundaries of time and region.

Krawczyk, Augusta

Institution: ***IL - North Central College***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Kaitlin Kirsch

Abstract Name: NCUR Murals Project (Collaborative Artistic Project)

I am a studio artist, with a focus on painting, inspired by both the natural world around me and the man made issuesof our society. My painting style is one I like to call fantastical surrealism, where I start by just putting a few blocked colors on the canvas then build up layers and layers of detail through techniques like dry brushing and stippling. I have painted on a variety of materials such as canvas, wood, and fiberglass.I have also used other mediums such as sculpture and assemblages to hit on issues such as women's rights, censorship, and societal controls. Based on this I would be interested in the Equity/Diversity/Social Justice theme. Recently I was a part of another collaboritave paintingproject for the community, the Downtown Naperville Alliance Truck Project. For this project two other artistsand I painted a sculpture of a truck with a retro theme. The project took place over the course of two weeks andwas commissioned by a local business, whowe worked directly withto develop and finalize our design. While I go to school in Illinois, I am from the Greater Orlando area. I have been involved in multiple exhibitions in galleries both in Illinoisand Florida.

Krebs, Seth

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Chemistry/Materials Science

Author/Contributors:
Seth Krebs,
Rabin Lamsal,
Woo Jin Chang

Abstract Name: Detection and Removal of Lead from Water Using Nanocomposite Film Electrode

Lead (Pb2+) is a heavy metal that is toxic when consumed, especially in high quantities. The United States Environmental Protection Agency (EPA) recommends that water contain less than 15 parts lead per a billion parts water to be safe for consumption. Screen printed electrodes (SPEs) were chemically modified and used as Pb2+ detectors in water with very low concentrations of Pb2+ present. Previous studies have shown that these sensors can detect lead in concentrations as small as 0.07 ppb, but further studies must be conducted to verify the consistency of the sensors with different concentrations of lead. The modification of the SPEs begins with the synthesis of cysteine-functionalized graphene oxide (sGO). A solution of sGO and polypyrrole (PPy) was electrochemically deposited onto the surface of the SPE, causing a nanocomposite film to grow on the electrode surface. The sensor detects Pb2+ in water by first depositing Pb2+ on the working electrode surface. Then, anodic stripping voltammetry is used to collect a range of signals that can be interpreted to determine the amount of Pb2+ in a sample of water. Results from previous studies indicate that the sensors are effective in adsorption and removal of Pb2+ in water samples. The sensitivity of the synthesized sGO/PPy nanocomposite makes it an effective method for the detection and monitoring of heavy metal ions in water.

Kromke, Gracie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Music

Author/Contributors:
Gracie Kromke

Abstract Name: "No"

I'm stuck in the middle and I want to find my way out. Don't you see how I sit there? I just listen and listen with the uncomfortable stare. Don't you see how I sit there? I question every word before it comes in the air. Don't you know how I'm afraid of you, how you steal and how you cheat and how you lie to me too.I never wanted for all this to get here but you've taken and taken from me, my dear. So tell me, tell me, something new. What are you hiding? Why do I have to rip it from you? Tell me, tell me, something new. I'm not tryna hold any grudges on you, but I'm sick and tired of all these dirty lies. I cannot barely even look you in the eyes. Anymore. Anymore. Anymore. Anymore. Anymore. Anymore. Anymore.Oh how did we get here? It's been a ride. It's been a ride. Why do I want to run and hide? To run and hide. I'm afraid. I don't know. I freak out. But I'm tryna let go of the past. Oh-oh. Don't you know? How this is the end, how this ends? Oh, how this ends, oh-oh. Don't you know? How this is the end, how this ends? Oh, how this ends, oh-oh. It's gotta end. It's gotta end,oh-oh, it's gotta end. It's gotta end. So tell me,tell me, something new. Whatare you hiding? Why do I have to rip it from you?You've taken enough from me. You've taken it all. I was lost,and I was scared, but now I'm making the call. So now, I'm saying no. I said no. I said no. I said no. I said no. I said no. I said no. No.

Kroncke, Richard

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Physics/Astronomy

Author/Contributors:
Richard Kroncke,
Brett Steck,
Gabriel Lewis,
Ozgur Yavuzcetin,
Juk Bhattacharyya

Abstract Name: **Detection of Radon and Gamma Radiation in Basalt Samples and Geothermal Springs**

Radon is produced by the parent element uranium. Uranium initially decays into radium, and finally radium decays into radon atoms. In the conversion from radium to radon, two protons and two neutrons, also known as an alpha particle, are lost. These elements are considered radioactive, because they are continually decaying. However, it is the decay of radon into other elements that pose the greatest risk. Elements such as polonium, which is produced from the decay of radon, becomes trapped in lungs and can cause physiological issues. Such issues, including various forms of cancer, are a major concern. Radon is common in older igneous rocks such as basalt. The abundance of radon in basalt is a natural concern given the geological characteristics of Iceland. The vesicles and fractures that compose basalt allow for feasible emission of radon particles into the surrounding soil and air. The purpose of this research project is to analyze the abundance of radon particles around geothermal areas located around Iceland. Through the collection and assessment of this data the severity of the amount of radon can be determined, which can influence safety protocols and mitigation efforts for native Icelanders. In tandem with detecting radon in Iceland we will bring a geiger counter to detectbackground radiation data and gamma radiation frombasalt samples in Iceland. Gamma radiation in basalt is due to traces of thorium, we will measure radiation near various basaltic formations and geothermal springs. This will be compared to background radiation to determine the amount of gamma radiation that is being emitted.

Kroschel, Ashleigh

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Ashleigh Kroschel,
Olivia Heinecke,
Rahul Gomes,
Rick Jansen

Abstract Name: Comparison of pathways and detection strategies for Pancreatic Ductal Adenocarcinoma (PDAC) using genetically engineered mouse model (GEMM)

Pancreatic ductal adenocarcinoma (PDAC) is a deadly, invasive pancreatic cancer. Currently, there are five central models used to investigate PDAC, namely, human PDAC cell line, cell line xenograft, patient derived xenograft, genetically engineered mouse models(GEMMs), and organoids. Cell lines don't represent the heterogeneous nature of PDAC nor the pressures of the human immunesystem making them less relevant than other models. Xenografts have a low engraftment rate making the number of models available exceedingly small, and organoids are still in development and analysis phase. In this research, we focus on exploring GEMMs, themost useful in biomarker discovery and specific gene mutations. Using these GEMMs, an in-silico model will be developed for simulating PDAC. Steps would include, developing a model, genetically modifying it, and predicting how often PDAC develops in the model to understand the importance of that gene in PDAC progression. Preliminary research revealed several detection strategies like PanIns, CA 19-9, stromal-related circulating molecules, biomarkers, and mitochondrial DNA. Some gene activity or pathways toexplore may include COX-2, Notch pathways, MMP-7 expression, and MAPK pathway.

Kruckeberg, Madelyn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Madelyn Kruckeberg *Megan Giordano*

Abstract Name: Goal Attainment Scaling and Use of Retrieval Based Practice

Using goal-attainment scaling to promote the effective use of retrieval-based learning strategies among college studentsBackground: Retrieval-based practice is a learning strategy built upon an extensive body of research demonstrating that frequent and intentional recall of information results in more robust learning and memory over time. (Agarwal et al., 2020; Carpenter; Agarwal, 2020). Unfortunately, retrieval-based practice is underutilized among college students (Pinheiro et al., 2022). Methods are needed that help students successfully incorporate retrieval-based practices into their study routines. Goal attainment scaling (GAS) has been found effective in facilitating skill acquisition by employing self-monitoring to promote goal attainment (Hoepner et al., 2021; Turner-Stokes, 2009). The current study investigated the effectiveness of GAS in supporting online college students' independent use of retrieval-based practice.Methods: Students in two online undergraduate courses in communication sciences and disorders were taught how to use retrieval-based practices and given weekly tips on how to apply them to specific course content throughout the semester. Additionally, all students from one course utilized GAS to track their progress in acquiring retrieval-based practice as a skill. Students from both classes completed start-of-course and end-of-course rating scales that assessed self-efficacy related to the use of retrieval-based practices and the likelihood of continued use of the strategy in future courses. Rating scales were then used to evaluate the effectiveness of GAS in promoting retrieval-based practices among college students.Analyses have not yet been completed. We expect both groups to improve in their knowledge of and use of retrieval-based practices, although we anticipate the GAS group to improve at a higher rate and be more likely to use the strategy in the future. Relationships will be discussed related to the variables being investigated in addition to applications of findings that may help college students effectively utilize retrieval-based learning strategies.

Kruczek, John Allen

Institution: ***IN - Indiana University South Bend***

Discipline: Computer Science/Information Systems

Author/Contributors:
John Allen Kruczek,
Le Li Kruczek,
Hossein Hakimzadeh

Abstract Name: iScheduler - Intelligent Scheduling For Building Optimal Class Schedules

Effective course scheduling can serve to improve department resource management as well as reducestudent time to graduation.Scheduling is a complex decision-making process that requires identifying all possible options and finding optimized solutions based on degree requirements, prerequisite relationships, offering of courses, and availability of students with appropriate backgrounds and prerequisites. The development of the iScheduler (intelligent scheduling) was initiated in 2017 as a class project in an upper-level database course, and later extended by (Alavo et. al 2018) and more recently by (Garcialazo et. al 2022). Our work extends and complements the iScheduler system in two areas. The first areais an adaptivestudent and advisor portal that presents a student with personalizedcourse suggestions and allow them to choose coursesbased on his/her degree requirement, successful completion of prerequisites, and his/her availability. The second areahelps department administrators build optimal class schedules by presentingcandidate faculty members for each course that isplannedto be offered based on expertise, availability, preferences, and scheduling conflicts, to allow for the effective use of faculty resources and reduce the possibility of class cancellation.

Krueger, Kim

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Kim Krueger

Abstract Name: The Informal Power of Women in the Late Roman Republic

The end of the Roman Republic was dominated by the elite male population who controlled society. These male authors put forth a vision of the Republic as it began to crumble, but they do not detail the power of women who existed beside them. However, women had their own ways to manipulate politics and social relationships both within and outside thefemale standards of behavior. These techniques were forms of informal power and can be understood by analyzing the sources through what is implied by the author. Clodia Metelli is one example of a woman who exercised female informal power. Clodia had status and wealth but was subjected to intense scrutiny by Cicero's famous trial oration, the Pro Caelio. This scrutiny produced a vision of the villainous Clodia that lasted centuries and has even influenced modern scholarship that does not note the male author's bias. However, it is possible to discern Clodia as a powerful individual in the Pro Caelio and the private letters of Cicero. This paper uses Clodia as a case study to define informal power because of the number of sources that write about her. These sources offer alook at Clodia as a remarkable woman who influenced politics through social relationships and wealth while officially relegated to the background of Roman society. Understanding the power of status and wealth that Clodia Metelli and othershad can reveal how women were able to influence society in ways not overtly seen in the historical record. Women similar to Clodia in the Late Republic were not just passive actors as their male relatives decided the fate of the Republic as previously believed. This project concludes that they were influential individuals that worked for their own independent aims through informal power that influenced the end of the Roman Republic.

Krueger, Megan

Institution: ***WI - Alverno College***

Discipline: **FAN Abstract**

Author/Contributors:
Jenna Coss *Eulandria Biddle* *Lauralee Guilbault*
Megan Krueger

Abstract Name: **Pipeline to Success through Research and Community Connections for Underrepresented Women in STEM Majors**

Alverno College is the first Hispanic serving institution in Wisconsin with programs aimed to increase the population of STEM majors from underrepresented communities. In 2011, a pipeline was created with the Girls' Academy of Science and Mathematics program (GA) where high school girls work with the Natural Sciences, Mathematics, and Technology division (NSMT) faculty on Friday nights to participate in STEM activities, which encourages them to apply for undergraduate STEM programs. Since 2018, NSMT has increased its capacity to provide STEM undergraduates with on-campus summer research opportunities. Traditionally, these programs are designed for upper level students; however, Alverno's program is open to students of all grade levels. The main goal is to increase student self-efficacy in the laboratory, connect scientific research to the local community, and increase persistence in STEM majors. Alverno and the Milwaukee Riverkeeper has established a partnership in efforts to make a community-based connection and assist in water analyses researched each summer. Beginning-level students conduct water sample collection, analyses, and hypothesis building using chemistry and biology methods over a six week program. Upper-level students conduct more advanced water chemistry analyses, microbiological, and molecular biology research over eight weeks. Students attend weekly laboratory meetings and professional development sessions to learn about STEM careers, research/internship opportunities, and receive academic advising.GA has served over 730 students. The majority of participants are girls of color (96%) and those who qualify for free or reduced lunch (98%). Each year approximately 18-20 girls matriculate from GA to Alverno with about half majoring in STEM. The summer research program has supported 73 researchers (56 unique students), 65% who identify as women of color with a 95% persistence rate. A common themed found was an increase in personal identity as a scientist (self-efficacy). Furthermore, 54% of 2021 summer researchers applied for off-campus research opportunities.

Krueger, Michael

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: **Business**

Author/Contributors:
Michael Krueger

Abstract Name: **Investor Sentiment During the Covid-19 Pandemic: Evidence from SPAC IPOs**

This study investigates how investor sentiment during the Covid-19 pandemic affects SPAC IPOs. A SPAC (Special Purpose Acquisition Company) is a company with no specified business operations otherwise referred to as a "Blank Check Company", the SPAC raises capital via an IPO (Initial Public Offering). The purpose of the SPAC IPO is to acquire a private company within a two-year period using the funds raised from the IPO. During the Covid-19 pandemic, expansionary monetary policies such as quantitative easing (QE), zero-federal funds rate, and the Economic Impact Payments (EIPs) augmented liquidity in the global financial markets. We find that investor sentiment (IS), which are the general beliefs investors have on a particular security, strengthens as investors with a money surplus experience FOMO (Fear of Missing Out). A money surplus mixed with a distressed economy caused many investors to invest in riskier assets such as SPACs due to FOMO. Using hand-collected SPAC data, we find that SPAC IPOs grew significantly in volume and size. During the pandemic, SPAC activities are positively associated with investor sentiment and consumer confidence. The results suggest that the enhanced investor sentiment boosts investor risk-tolerance toward much riskier investments such as SPACs.

Krueger, Natalie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Natalie Krueger

Abstract Name: **A Survey on Deepfake Detection Methods**

A deepfake is an engineered photo or video of a person in which their image has been altered or replaced with an image of someone else. Some types of deepfakes include face-swapping (switching an image of a face with another), lip syncing (an audio method where the real audio is replaced), and face synthesis (creating a fake image of a face by altering features of a real face image). Deepfakes have the potential to cause a variety of problems and are often used maliciously. A common usage is altering videos of prominent political figures and celebrities. These deepfakes can portray them making offensive, problematic, and/or untrue statements. Current deepfakes can be very realistic, and when used in this way, can spread panic and even influence elections and political opinions. Even more concerning is that deepfakes are easier to produce than ever, and even someone with very little knowledge of technology can use premade methods to create them. There are many deepfake detection strategies currently in use but finding the most comprehensive and universal method is critical. So, in this project we will address the problems of malicious deepfake creation and the lack of universal deepfake detection methods. Our objective is to survey andanalyze a variety of current methods and advances in the field of deepfake detection.

Krueger, Samantha

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ethan Hensel,
Samantha Krueger,
Dean Wink

Abstract Name: **A Culturally Informed Approach to Improving Forest Diversity in Bad River Tribal Lands**

Forest diversification is essential to creating and maintaining healthy, resilient forest ecosystems. Forest diversification buffers the effects of climate change, creates new habitats for plants and animals, and improves biodiversity increasing the speed of succession. Without forest diversification, plant and animal life are at higher risk of localized extinction. More species and populations of plants and animals thrive in an ecosystem that facilitates their habitat needs. In this project we worked with the Mashkiiziibii (Bad River) Natural Resources Department to diversify their forested lands. We acknowledge that the Mashkiiziibii tribal lands are of cultural significance and their cultural values play an important role within their community. For this project, we used LiDAR images and superimposed soil maps to locate sand lenses that have the potential to house new tree species and improve biodiversity. By collecting and analyzing samples from the study areas in the field, we were able to verify our observations from remotely sensed data.

Krull, Abigail

Institution: *IA - Iowa State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Connor Davison,
Abigail Krull,
Kierinn Mobley

Abstract Name: **Creation of Anxa2 Deletion Mutants in Zebrafish Using&#65533;CRISPR/Cas9&#65533;Gene Editing**

Annexin A2 is a calcium-dependent phospholipid-binding protein that facilitates angiogenesis via endothelial barrier maintenance and sprout formation. However, the functions of Annexin A2 are not well established in endothelial cells in vivo. The Annexin A2 gene in humans corresponds to a duplicated locus in zebrafish, called anxa2a and anxa2b. We are using CRISPR-Cas9 to make mutations of the Annexin A2 homologs in zebrafish to take advantage of the optical clarity of the early embryo to follow endothelial morphogenesis. Due to the possible overlapping functions of these homologs, we designed gRNAs that, when complexed with Cas9, targeted the 5' and 3' UTRs of both anxa2a and anxa2b. This was done to induce whole gene deletions instead of creating loss-of-function mutants through indel formation. These whole gene deletions would allow us to avoid genetic compensation induced by mutant transcripts. We also designed a tag-RFP construct flanked by short homology arms for integration into the deleted locus to visually track anxa2a and anxa2b expression during development. Here, we describe a whole gene deletion of anxa2a (14,172 base pairs) via CRISPR-Cas9 injection in fli1-egfp embryos. We have recovered a stable germline deletion in anxa2a. Our next steps are to induce a whole gene deletion in anxa2b for further functional analysis and create mutants homozygous for both deletions. This will allow for loss-of-function analysis of the Annexin A2 duplicated locus in zebrafish for a more complete phenotypic analysis and characterization of the genetic requirements of anxa2a and b during endothelial morphogenesis.

Kruschke, Alex

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Rose,
Brennan Vanlandingham,
Jillian West,
Rachel Baltuff,
Alex Kruschke,
Madison Lloyd

Abstract Name: **Role of Motivation on Academic Success**

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation in education is and how it impacts the academic success of college students. Factors that will be studied include intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation students vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions adressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Kubatova, Alena

Institution: *ND - University of North Dakota*

Discipline: **FAN Abstract**

Author/Contributors:

Prajukti (juk) Bhattacharyya *Catherine Chan* *Frey Angela*
Alena Kubatova *Jennifer Johanson* *Daphne Pedersen*
Rebecca Simmons *Shaina Mattingly* *Kanishka Marasinghe*
Gregory Vandeberg *Ryan Zerr*

Abstract Name: **Creative Ways of Broadening Participation in Undergraduate Research**

In this panel discussion, moderated by Prajukti (juk) Bhattacharyya (UW-Whitewater), three panelists will highlight innovative and effectivepractices for broadening participation in undergraduate research from the perspectives of faculty and administrators. These presentations will describe successful models of expanding participation from an administrator's point of view, as well as highlight the roles of community engagement, mixed-age mentoring, and seminars designed to develop students' identities as scholars.Catherine Chan from UW-Madison will highlight various barriers for expanding participation,and provide practical tools and effective collaboration strategies for overcoming those, based on her almost two decades of experience as a faculty mentor, grants administrator, program manager, and institutional administrator at different types of institutions. Angela Frey (co-author Jennifer Johanson) from Alverno College will showcase a mixed-age project where upper level students apply their STEM learnings to fulfill an unmet need of a community organization and disseminate their works through blog posts and presentations, while beginning students comment on those posts and personally reflect on the value of those projects conducted by upper-level projects. This presentation will focus on how the design of this project provides role models and leadership opportunities through community engagement, and ultimately leads to increased STEM identity and retention for students from underrepresented backgrounds.Alena Kubatova (co-authors Daphne Pedersen, Rebecca Simmons, Shaina Mattingly, Ka nishka Marasinghe, Gregory Vandeberg, Ryan Zerr) from University of North Dakota will describe a 1-credit science literacy seminar course paired with different curriculum-based research experiences (CURES) offered over the last three years. This presentation will focus on the impacts of these readings and discussions on beginning students on developing their STEM identities, interest in science topics, and formation of deep connections with faculty and peers.

Kucharski, Cody

Institution: *GA - Kennesaw State University*

Discipline: **Architectural and Interior Design**

Author/Contributors:

Cody Kucharski

Abstract Name: **Learning from Public Spaces in Historic Cities**

Successful public spaces in cities are key for enhancing social cohesion and improving health and safety. Learning from historic cities involves the development of representational and analytical tools aimed at capturing their essence as places of human interaction. The research reports findings of the spatial analysis of twenty Adriatic and Ionian coastal cities, which addresses the question of how the network of public spaces calibrates different degrees of spatial enclosure necessary for creating successful social interactions. Cities in the littoral region include well-preserved historic centers that are renowned for the successful integration of urban squares into the urban fabric. For the purpose of this study, we define urban squares according to areas visible from key public buildings and measure the compactness and convexity of their shapes. We then plot the plaza shapes of all twenty cities in a two-dimensional matrix and classify them into groups that represent various degrees of enclosure and spatial interaction. The study discovers the existence of three main classes of plazas found in cities along The Adriatic and Ionian coastline, suggesting the effect of specific regional and national influences on urban form. On the one hand, the study develops analytical methods for capturing the degree of spatial enclosure of public spaces, and on the other hand, it suggests principles of contemporary urban design based on historical precedents.

Kuehn, Rachel

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Psychology/Neuroscience

Author/Contributors:
Rachel Kuehn

Abstract Name: Novel Estrogen Receptor ?? agonist EGX358 in a female mouse model of Alzheimerðs Disease

There are many contributing factors in the development of Alzheimer's Disease (AD), including age, biological sex, and apolipoprotein E (APOE) gene variants. While the APOE3 allele has been deemed a neutral risk factor in AD development, presence of one or two copies of the APOE4 allele results in a starkly increased likelihood of developing AD, especially in postmenopausal women, due to the loss of circulating estrogens. Although current estrogen therapies have been used to treat hot flashes, anxiety, and cognitive difficulty, activation of estrogen receptor has been shown to increase risk for both cancer and stroke. By targeting estrogen receptor (ER) instead, these harmful side effects may be bypassed without compromising the overall benefits of treatment using estrogen therapies. In order to test the efficacy of an ER agonist, a novel compound (EGX358) was administered in a female mouse model of AD. Mice expressed five copies of familial AD gene mutations, in addition to either two copies of the human APOE3, or one APOE3 and one APOE4 (E3FAD, E3/4FAD) gene. Vehicle (10% DMSO) or EGX358 (10 mg/kg/day) were administered orally via hydrogel for eight weeks. Mice were trained and tested for Object Recognition (OR) and Object Placement (OP) memory, anxiety-like behaviors, and senktide-induced hot flash-like symptoms. EGX358 improved memory in OR among both genotypes, and had little effect on anxiety-like or hot flash responses, although E3/4FAD mice spent more time in the center of the Open Fieldand had higher sensitivity to drug-induced hot flashes than their E3/3FAD counterparts. Interestingly, preliminary results show no clear difference in basal dendritic spine densities in the CA1 subregion of the dorsal hippocampus, a brain region highly implicated in episodic memory. Therefore, ER-selective treatments appear to be efficacious for some AD-related symptoms, with underlying mechanisms yet to be determined.

Kuna, Abby

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Psychology/Neuroscience

Author/Contributors:
Linnea Lerwick,
Abby Kuna

Abstract Name: Effects of Stereotype Threat on Executive Function

Activating age-related stereotypes, known as stereotype threat, can lead to a decrease in executive functioning in older adults (Hess et al., 2003). However, there is limited research on the effects of aging stereotypes on middle aged adults. We examine the effects of stereotype threat on executive function across three age groups: young, middle-aged, and older adults. All participants are randomly assigned to either a stereotype threat condition or a control condition. We plan to investigate the role of stereotype threat on an executive function task using the "Age Identification Scale" (Garstka et al., 1997) and the "Attitudes Towards Own Aging" questionnaire (Lawton, 1975) to establish stereotype threat and using the Digit Span Task (Blackburn; Benton, 1957) and the Wisconsin Card Sorting Task (Heaton et al., 1993) to assess executive function. We have completed our data collection and are starting our data analysis. We hypothesize that (1) middle-aged and older adults will have lower performance under the stereotype threat condition compared to their counterparts in the non-stereotype threat condition and (2) middle-aged and older adults will have lower performance on the cognitive tasks than younger adults in both conditions. We will use a two-way independent factors ANOVA to examine the relationship between stereotype threat and performance, age and performance, and the interaction between age and stereotype threat. Findings from this research expands the literature surrounding stereotype threat and executive function in middle age, which has not been extensively studied. Further, we will examine the influence of people's beliefs about their age and the impact of those beliefs on cognitive tasks that assess executive function. Findings from this research will have implications for how we understand executive function in the aging population.

Kunze, Jordan

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Chemistry/Materials Science

Author/Contributors:
Jordan Kunze,
Matthew Ray

Abstract Name: Impact of Personal Care Products on Tensile Strength and Structure of Hair

There is currently a lot of debate over hair products and the components within them. While sulfates and parabens have been the two most controversial components within hair products, there is very little public knowledge regarding how other common chemical components impact hair. The purpose of this research is to explore the chemical components citric acid, hydrogen peroxide, and sodium chloride found in shampoo specifically and evaluate the impacts that each of these chemical components can have on hair. This was quantified through measuring changes in tensile stress and strain after chemical treatment when compared to the initial dry hair and a deionized (DI) water soak control. A high-resolution tensile tester capable of measuring the strength of a single hair was constructed from commercially available components and sensors. The diameter of each hair was determined by optical microscopy after chemical treatment. Based on the results of this study, it does appear that there are measurable changes in hair strength and elasticity after some of the chemical interactions tested. Samples exposed to hydrogen peroxide and citric acid showed the greatest decrease in tensile strength while sodium chloride appeared to have a strengthening effect. Samples soaked in deionized water showed a marked increase in elasticity and elongation at break while exposure to sodium chloride decreased the observed elongation at break when compared to the dry untreated control. Further research needs to be done to elucidate the significance and repeatability of the observed effects.

Kurber, Elisa

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Communication/Journalism

Author/Contributors:
Elisa Kurber

Abstract Name: Storytelling Through Video Games - A Communication Study

In this paper, I explore the function of narrative in role playing video games and its relationship to players, as well as how it can connect and communicate with them on a deeper level through the effect of immersion—particularly in regard to those with mental conditions such as ADHD, anxiety, depression, and more. I do so by analyzing interview data I collected from research participants who play video games and have experienced this sense of deep narrativeimmersion by asking specific questions about their feelings, experiences, and interests regarding the topic. I also will be using Walter Fisher's narrative paradigm theory as a framework to understand video gaming as a mental health salve, exploring the effectiveness of narrative communication in this format. Finally, I analyze data from other published research to help understand and explain the reasons in which humans are able to connect with narrative in such a manner, and why video games could be considered a form of narrative communication no different than other forms of media such as books or movies/television.

Kurtz, Jadelyn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Lesley Mayne,
Jadelyn Kurtz

Abstract Name: A Comparison Study of the Autism Spectrum Disorder Attention Profile in Detailing Attention

This research investigated the use of The Autism Spectrum Disorder Attention Profile (ASDAP) to assess attention in individuals with autism. The goal of this pilot study was to identify how the ASDAP quantifies and qualifies attention compared to the Childhood Autism Rating Scale (CARS) and the Gilliam Autism Rating Scale (GARS) for subjects who have, or are suspected to have, autism spectrum disorder (ASD).Attention deficit hyperactivity (ADHD) in individuals with ASD, considered comorbid in 50-70% of cases (Hours, Recasens,; Baleyte, 2022), is under-researched because it is not classified as a trait of ASD. Attention requires the filtering of information at the level of the basal ganglia (Awh; Vogel, 2008), amygdala (Avino, et al., 2018), and cingulate cortex (Libero, 2015). Additionally, the combination of genotypes, phenotypes, and epigenetics impact attention (Robinson, 2015; Peaston; Whitelaw, 2006). A review of the research and clinical practice informed the development of 15 ASDAP factors.The aim of the research was to determine differences in the quantity and quality of information yielded across the seven attention categories in CARS, three categories in GARS, and 15 categories in ASDAP. The researchers recruited participants with or suspected of having a diagnosis of ASD to participate in a two-hour long informal assessment either in their home or in the UWEC CCD clinic. Individuals (N = 5) were observed during interactive play, or a preferred activity. Observations and caregiver interview responses were completed for the three protocols. We expect to discover preliminary findings on the efficacy of measuring attention through the ASDAP both quantitatively and qualitatively. Furthermore, documented differences in the summary information from the ASDAP, CARS, and GARS is expected. Data will be presented showing how information obtained from the ASDAP is efficacious in understanding attention in individuals with ASD.

Kuzbiel, Sara

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sara Kuzbiel,
Katelyn Schad,
Nathan Tran,
Stacy Chamberlin

Abstract Name: Stabilizing the Dimer of Non-Structural Protein 9 in SARS-CoV-2

SARS-CoV-2 is an RNA+ virus that is directly translated by the host cell to produce non-structural proteins (Nsp 1-16) essential to the replication of viral RNA.One interesting non-structural protein, Nsp 9, contains an unusual OB-greek key motif known in other viruses to bind single stranded RNA working with the helicase to allow efficient replication. Additionally, this protein is thought to dimerize for efficient RNA binding; however, the specific mechanism of dimerization and the interaction between this dimer protein and a cognate RNA sequence are currently unknown. To better understand the requirements for dimer Nsp 9-RNA binding, we have made a cysteine mutant to covalently stabilize this dimer. Tryptophan fluorescent studies have been developed to determine differences in binding affinities of both RNA and DNA sequences to help identify requirements of complex formation between Nsp 9 and, an as of yet, unidentified cognate RNA. Initial studies indicate binding of an RNA pseudoknot structure could aid in sequestering Nsp 9 to untranslated regions of the viral RNA.

Kveton, Peter

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Physics/Astronomy

Author/Contributors:
Peter Kveton

Abstract Name: Relating Hall Viscosity from Hall Conductivity in Quantum Hall Systems

Quantum Hall systems help create more accurate and precise measurements at the quantum scale. Moving electrons in 2-dimensional materials under a strong perpendicular magnetic field reveals an interesting phenomenon such as quantized Hall resistance, generically in low temperatures, these systems are called quantum Hall systems. The strong magnetic field limits the complexity of particles as though they are spinless and also breaks parity symmetry. When these particles move, they bend toward a preferred transverse direction. Computing transport coefficients, such as conductivities and viscosities, theoretically can become quite a task. When the electrons are under an inhomogeneous electric field as well as the magnetic field, there is a Lorentz shear response, referred to as Hall viscosity. This Hall viscosity theoretically exists yet, no experimental measurements have been made. There is an interesting relation between the Hall viscosity and the momentum-dependent part of the Hall conductivity. Our goal is to derive a relationship using a semiclassical approach using stress-energy tensor and the Kubo formula. We expect this study will provide insights into the mysterious Hall viscosity.

Kviz, Brandon

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Megan Schmitz,
Julia Karls ,
Brandon Kviz,
Elianna Zimmerman,
Maia Latvala

Abstract Name: "I get physically ill when I think about us?: Making sense of memorable breakup messages

All relationships have a beginning; some have an end. The experiences we have as we disengage from relationships influence our understanding of those relationships. To better understand the memorable messages that individuals received during romantic relationship breakups, we sought to answer the following questions: What is the significance of memorable breakups? Which words or phrases are consistently remembered during a breakup? Do memorable messages usually come from the person breaking up or the person being broken up with? To answer these questions, the research team conducted 16 semi-structured interviews; participants were recruited via convenience sampling. Thematic analysis techniques (Nowell, Norris, White; Moules, 2017) were used to identify the following themes: Many of the reasons for a breakup appealed to an individual's desire for independence as they looked toward the future. Many memorable breakups also had connections with an individual's family or friends' disapproval of the relationship. In general, negative or harmful relationships yielded negative breakup memories while healthy relationships usually yielded more positive or mutual disengagement conversations. As participants reflected on a memorable breakup and pondered future breakup communication they would execute, every individual mentioned something they learned from in their memorable breakup.

Kwon, Christine

Institution: *IL - University of Illinois Urbana-Champaign*

Discipline: Social Work

Author/Contributors:
Christine Kwon

Abstract Name: **Adverse Childhood Experiences, Intimate Partner Violence, Anger, and Mental Health Symptoms Among Incarcerated Women**

Introduction:An alarming number of incarcerated women report histories of adverse childhood experiences (ACEs) and intimate partner violence (IPV), which can increase women's risk for negative mental health symptoms. Research is needed to examine mechanisms to explain the link between ACEs, IPV, and mental health symptoms among incarcerated women. Women who are incarcerated may have little choice, or little space, to express their emotions. The current study explored the role of state anger, including anger expression and anger control, in the association between ACEs, IPV, and mental health symptoms among incarcerated women.Methods: Data from a 2019 study at a multi-security prison was utilized, which included 832 women between the ages of 18 and 85 (M = 38). Women were racially diverse (50% White, 35% Black/African American, 15% Latina/x or another). A mediational path analysis was conducted to examine associations between ACEs, IPV, anger (i.e., state anger; expression and control of anger), and mental health symptoms (i.e., depression, anxiety, and post-traumatic stress disorder [PTSD]).Results: Approximately 60% of women reported four or more ACEs, and 70% had experienced IPV. Women reported clinically significant levels of depression (43%), anxiety (29%), and PTSD (65%). ACEs (B = .45) and IPV (B = .30) were both associated with higher levels of state anger. State anger indirectly explained the associations between ACEs and mental health symptoms, as well as between IPV and mental health outcomes.Conclusions: Women's anger has been both under-researched and over-pathologized. The current study examined the ways in which anger may contribute to the associations between adversity and mental health symptoms. By illuminating some of the root causes of anger, this research can assist practitioners and prison staff to better support the mental health of incarcerated women by understanding where their anger comes from and increase their quality of life.

Kyle, Emily

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Emily Kyle,
Dr. David S. Richard

Abstract Name: **The Effects of Hypoxia and Hypobaria on Sima (HIFa) gene expression in Drosophila melanogaster**

With the rising rates of global climate change, insects such as disease vectors and agricultural pests are migrating to higher altitudes. We are interested in how the model insect Drosophila melanogaster may respond under the related conditions of hypobaria (low pressure) and hypoxia (low oxygen). Typically, hypoxic conditions result in the persistence of hypoxia inducible factor proteins (HIFs) that then initiate physiological responses to the condition via the regulation of gene expression. The homologous protein to mammalian HIFa in insects is Sima. It in turn can be signaled for degradation under normoxic conditions by the proline hydroxylase protein Fatiga. Flies were exposed one of four treatment groups: normal oxygen at normal pressure (sea level), 10% oxygen at normal pressure (isolated hypoxia), normal oxygen at 50% pressure (isolated hypobaria), and 10% oxygen at 50% pressure (high altitude equivalent to 5400m ASL). 24 hours post-treatment, the flies were sexed, RNA was extracted and cDNA was produced via reverse transcription. Real Time PCR (qPCR) was conducted to quantify Sima against a tubulin internal standard. Results indicated that hypobaric and hypoxic conditions separately induced significant expression of the Sima gene. Interestingly, the high-altitude hypoxic/hypobaric flies appeared to express lower Sima levels than the isolated hypoxic or hypobaric flies suggesting. Future work will include an analysis of the different ways that females and males respond to these conditions, as well as their effects on Fatiga expression. This work may aid our understanding of how insect populations could adapt to climate change via vertical migration.

Kyveryga, Victoria

Institution: ***IA - Iowa State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Victoria Kyveryga,
Hao Nghi Luu

Abstract Name: Characterization of Quantum Dot Dispersions in Liquid Crystals

Liquid crystals are a phase of matter which have unique properties in between those of a conventional crystalline solid and conventional isotropic liquid. Their anisotropic properties have been exploited for applications such as liquid crystal displays, drug delivery nanocapsules, and smart windows. A past study conducted by Konshina et al. demonstrated that the optoelectronic properties of liquid crystals can be improved by adding small amounts of CdSe/ZnS quantum dots into the liquid crystal matrix. In particular, the switching time of liquid crystalsand the corresponding voltage needed to induce such switching both decrease upon quantum dot doping. However, aggregation and conglomeration of quantum dots limits the complete realization of these optoelectronic improvements. To address this stability obstacle, our study explores the nature of aggregation of CdSe quantum dots in a 4′-Pentyl-4-biphenylcarbonitrile (5CB) liquid crystal medium. Droplets of quantum dot dispersions in liquid crystals were placed on treated glass substrates and analyzed under a polarized optical microscope. Aggregation was quantified with an image analysis application and exploitation of the anisotropic nature of liquid crystals. Correlations between aggregation degree and quantum dot size, heating profile and duration, and solvent type were established. Our studies of quantum dot aggregation in 5CB liquid crystals contribute to current efforts to optimize the synthesis of stable quantum dot-liquid crystal dispersions for optoelectronic applications.

L Joseph, Luctamuelle

Institution: ***NJ - The College of New Jersey***

Discipline: Biology

Author/Contributors:
Lucatmuelle L Joseph,
Kiandry Minaya,
Donald Lovett

Abstract Name: Change in Gene Expression in Green Crabs in Response to Environmental Salinity Change

When exposed to low salinities, the green crab Carcinus maenas experiences elevated hemolymph levels of methyl farnesoate (MF), a putative hormone that may be involved incrab osmoregulation. The final step of the MF biosynthetic pathway is catalyzed by the enzyme farnesoic acid o-methyltransferase (FAOMeT). Previous work in our lab has identified a long isoform and a short isoform of FAOMeT in the green crab; the cDNA sequences of the two isoforms wereidentical, except that the short isoform had a 15 bp deletion. Sequencing of genomic DNA determined that there were no introns present in the area of the 15 bp deletion, which suggestedthat the presence of two isoforms of FAOMeT was due to gene duplication rather to than alternate splicing. In a time-course study of crabs that had been transferred to low salinity (10 ppt), the relative amount of mRNA for the short form increased after several hours of exposure to low salinity, whereas the relative amount of mRNA for the long form did not increase significantly until the crab hadacclimated to low salinity (21 days after transfer).

Laatsch, Bethany

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alexis Kielman,
Brianna Finke,
Bethany Laatsch,
Sanchita Hati,
Sudeep Bhattacharyay

Abstract Name: Conformational Dynamics and Function of?Escherichia coli?Prolyl-tRNA Synthetase in Crowded Environments

Conventionally, enzymes are studied in vitro under dilute conditions. However, in vivo conditions are different; enzymes are surrounded by the crowded cellular milieu that contains a variety of molecules of different shapes and sizes. Crowding impacts the structure, function, and dynamics of enzymes, the molecular mechanism of which has remained only partially revealed. In the present study, the crowding mechanism was investigated by replicating the intracellular crowded environment using synthetic polymers and their monomers. The model enzyme utilized was Escherichia coli prolyl-transfer RNA synthetase (ProRS), a multidomain enzyme involved in catalyzing the ligation of proline to tRNAPro during protein biosynthesis. The conformational dynamics and function of ProRS in crowded conditions were probed using intrinsic tryptophan fluorescence spectroscopy, molecular simulations, and enzyme kinetics. Results of this study are expected to shed light on the molecular mechanism of crowing and aid in structure-based drug design. Preliminary results of the study will be presented.

Laatsch, Matt

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Bryce Shoberg,
Matt Laatsch,
Moriah Weiss,
Rebecca Boese,
Muhaison Ibrahim,
Krysti Knoche Gupta

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate cultures, one with La3+-rich media and one with Ca2+-rich media. Methylene blue is polymerized onto the surface of a glassy carbon electrode, then harvested bacteria or isolated enzyme is immobilized on the electrode by casting a mixture of the bacteria and tetrabutylammonium bromide (TBAB)-modified Nafion® onto the electrode surface. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria and isolated

Ladick, Ciara

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Hayden Stovey,
Ciara Ladick

Abstract Name: **Exploring the Role of Knowledge and Topic Interest in Predicting Mind-Wandering Among College Students in a Night Class**

Purpose: In this study, students self-rated topic interest, familiarity and mind-wandering during and after weekly class sessions. Attention and engagement during class is a crucial aspect of learning (Szpunar et al., 2013). Mind-wandering is a phenomenon that occurs when the mind shifts thoughts from the topic that is being presented to other internal thoughts (Smallwood; Schooler, 2006). Mind-wandering is associated with reduced academic outcomes, including reduced recall of lecture-based content (Risko et al., 2012), and is associated with working memory capacity, intentionality, motivation and increased time on task (Soemer; Schiefele, 2020). Further investigation into the effects of topic interest and topic familiarity may provide additional insights into modifiable factors influencing mind-wandering within the college classroom.Methods: For six consecutive weeks, students in an undergraduate night class were surveyed midway through each class and at the end of each class. At both points in each class session, students were anonymously surveyed regarding their interest level in the course content presented in that class, as well as their familiarity with the topic and the degree of mind-wandering that occurred during class. Mind-wandering was assessed via the five-item Mind-Wandering Questionnaire (MWQ; Mrazek et al., 2013).Relationships will be discussed related to the variables being investigated. Additionally, applications of findings to student self-efficacy, responsibility and metacognitive learning strategies will be discussed as will potential strategies to mitigate mind-wandering during class.

LaFond, Megan

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Education

Author/Contributors:
Megan LaFond

Abstract Name: **Mathematical Identities of Pre-service Elementary Teachers**

Mathematical identity is defined as “the ways in which students think about themselves in relation to mathematics and the extent to which they have developed a commitment to, are engaged in and see value in mathematics and in themselves as learners of mathematics” (Graven, 2019). The mathematical identities of pre-service teachers influence not only their own mathematical work as they prepare to become teachers, but also their future mathematics teaching (Lutovac, 2013). Research suggests that mathematical identities are formed by specific and memorable positive or negative mathematical experiences during the school years. In this study, I focus on comparing the mathematical identities of preservice elementary teachers at both the start and the end of their mathematics content sequence (the start of their math methods course). Preservice elementary teachers in three sections of a first university math course (Number Systems) and in a section of their math methods course completed a twenty-four question Likert survey that asked them to reflect on their mathematical experiences and views on mathematics. Once the initial data was collected, a select group of students holding either an overall positive or negative mathematical identity were identified to participate in interviews. In that interview, they were asked to reflect on their mathematical memories, to talk about what it means to be a “good math student” and a “good math teacher” and to reflect on how their beliefs about math changed during their math content sequence (if at all) and why. The data provides an understanding of how (and whether) mathematical identities evolve during teacher preparation, and to what participants attribute that evolution. In this talk, I will present the preliminary results of this work.

Laguna, Daniela

Institution: *AR - Arkansas State University*

Discipline: Biology

Author/Contributors:
Daniela Perez Laguna,
Uddhab Karki,
Xiaoting Wang,
Jianfeng Xu

Abstract Name: **Plant cell-secreted growth factors for ex vivo massive production of red blood cells**

Ex vivo generation of clinically available red blood cells (RBCs) from hematopoietic stem cells represents a promising approach for overcoming the limitations associated with the use of donor's blood. Both expansion and differentiation of hematopoietic stem cells are highly reliant on erythropoietic growth factors. This project aims to develop a novel plant cell-based bioproduction platform for erythropoietic growth factors at significantly reduced cost. In addressing the low productivity bottleneck of plant cell culture technology, we are engineering hydroxyproline (Hyp)-O-glycosylated peptides (HypGPs) that function as a molecular carrier to boost the secretion of fused proteins from culture plant cells. Each of three key erythropoietic growth factors essential for the expansion and differentiation of hematopoietic stem cells, including erythropoietin (EPO), stem cell factor (SCF), and interleukin 3 (IL-3), were expressed in tobacco BY-2 cells as a fusion with a strategically designed HypGP tag, for example (SP)20 consisting of 20 tandem repeats of a "Ser-Pro" motif. The secreted protein yields were up to 500-fold greater than the expression of growth factors controls lacking a HypGP tag. The HypGP-tagged growth factors secreted from plant cells exhibited bioactivity in stimulating the proliferation of TF1 erythroleukemic cells. Furthermore, the plant cell-derived growth factors were able to stimulate the expansion and differentiation of umbilical cord blood-derived CD34+ cell towards RBCs. This project provides a new cost-effective bioproduction platform for erythropoietic growth factors, facilitating the manufacturing of stem cells-derived RBCs at a large scale for clinical applications.

Lam, Justine

Institution: *NY - University of Rochester*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Justine Lam,
Hitomi Sakano

Abstract Name: **Effect of Sound Exposure on c-Fos Expression in the Cochlear Nucleus of Fmr1-Knockout and Wild-type Mice**

Fragile X Syndrome (FXS) affects 1 in 4,000 males and 1 in 6,000 females in the United States and is the leading hereditary cause of autism and intellectual disability. The disorder is caused by a trinucleotide repeat expansion in the Fmr1 gene that leads to a loss of the protein product FMRP. Although it has been established that individuals with FXS exhibit auditory hypersensitivity, the relationship between sound exposure and neuronal activity remains sparsely examined. We hypothesize that Fmr1-knockout (KO) and wild-type (WT) mice respond differently to sound exposure. Using the expression of c-Fos (the protein product of an immediate early gene) as a marker of neuronal activity, we compared the responses between KO and WT to various sound pressure levels.Twenty, 14-day-old mice from each Fmr1-KO and WT strain were evenly distributed into four sound exposure groups. After two hours of habituation, each group was exposed to either 20, 40, 60, or 80 dB of sound for two hours. Following the sound exposure, mice were euthanized and perfused. Mice brains were harvested. Cryosections through the brainstem were immunostained with anti-c-Fos antibodies. The number of c-Fos stained cells in the cochlear nucleus were counted. An analysis of preliminary data revealed that c-Fos expression is sound intensity-dependent; as the magnitude of sound level increases, the expression of c-Fos increases. This is the first study to investigate sound pressure level and c-Fos expression correlation in Fmr1-KO mice. These findings suggest that auditory stimulation does lead to c-Fos expression in the cochlear nucleus of Fmr1-KO mice and that the expression occurs in a dose-dependent manner. Here we present the comparison of KO and WT mice.

Lamantia, Joshua

Institution: ***IN - Indiana University Purdue University Indianapolis***

Discipline: Communication Science and Disorders

Author/Contributors:
Joshua Lamantia,
Kourtney Sloan,
Randall J. Roper, Ph.D.

Abstract Name: Femoral and Lumbovertebral Strength and Microarchitecture in the Dp1Yey Down Syndrome Mouse Model

Down syndrome (DS), affecting ~ 1 in 800 live births, is caused by the triplication of human chromosome 21 (Hsa21). Individuals with DS have skeletal features including craniofacial abnormalities and decreased bone mineral density (BMD). Lowered BMD can lead to increased fracture risk, and common fracture points are mainly in the femoral neck with some in the lumbar spine. While the femur has been studied in DS mouse models, there is little research done on the vertebrae. It is also important to establish when skeletal deficits occur to find a potential treatment timepoint. The Dp1Yey DS mouse model has all genes triplicated on mouse chromosome 16 orthologous to Hsa21 and displays deficits in femoral bone, including trabecular and cortical deficits in male but not female mice, at 12 weeks. We hypothesize that the long bone and lumbovertebral microarchitecture and strength will exhibit deficits in Dp1Yey mice compared to control mice at 6 weeks. The trabecular region of the 4th lumbar (L4) vertebra and the trabecular and cortical regions of the femur are analyzed via micro-computed tomography (micro-CT), compression testing, and 3-point bending in 6-week-old male and female Dp1Yey mice and wildtype controls. Trabecular and cortical deficits were observed in femurs from male Dp1Yey mice, but only cortical deficits were seen in femurs of female Dp1Yey mice. Preliminary results of the L4 show male and female Dp1Yey mice have significantly lower BMD compared to control mice. Additionally, male Dp1Yey mice show deficits in trabecular thickness and BV/TV. Our results indicate that skeletal deficits occur early in development, are sex dependent, and potential treatments should likely begin early in the development of mouse models of DS.

LaMore, Ainsley

Institution: ***MO - Truman State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ainsley LaMore,
Bill Miller,
Grant Freitas

Abstract Name: Investigation of potential inhibitors of SARS-CoV-2 spike protein by molecular docking and molecular dynamics

On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. Since then, the disease has had an immense impact at a global level. The WHO reports over 600 million COVID-19 cases and around 6.5 million deaths. COVID-19 is caused by a coronavirus called SARS-CoV-2, predominantly causing mild to moderate respiratory illness. SARS-CoV-2 contains proteins on its surface, Spike proteins, that attach to human cells through the angiotensin-converting enzyme 2 (ACE2). Their large role in transmission and prominence in solely coronaviruses make them an ideal drug target.The ZINC online molecular database provided 7.8 million molecules as a starting list of potential drugs for this project. These molecules were initially screened using a process called molecular docking where they are placed in the binding site of the protein by a computer program. The physical movement of these molecules within the active site under in vitro conditions is modeled with a technique called Molecular Dynamics (MD). The average binding affinity is calculated to assess binding favorability.Around 7.8 million molecules from the ZINC database underwent molecular docking. From these molecules, the top 100 molecules with the most favorable docking scores were further analyzed through 50 ns MD simulations. For all 100 simulations, an average binding free energy score was calculated. 10 molecules from these 100 simulations showed promising results from their favorable binding free energies. The top ten molecules with the lowest binding free energy scores were simulated for an additional 50 ns for a total of 100 ns, and these reproduced in triplicate.From the 7.8 million molecules obtained from the ZINC online molecular database, three molecules have been found to show exceptional inhibitory promise in ceasing the function of the spike protein in SARS-CoV-2.

Lamug, Isabelle

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biology

Author/Contributors:
Isabelle Lamug *Martin Arlt* *Jacob Mueller*

Abstract Name: **Investigating interactions between Sstx and other mouse X- and Y-linked amplified genes**

Genes essential for cellular viability are typically conserved acrossspecies. Interestingly, recently acquired (present in one or fewlineages) genes, Slx and Slxl1, on the mouse Xchromosome are essential for spermatogenesis, and thus male fertility. Slx and Slxl1 are thought to compete with a related and recently acquired Y-linked gene, Sly. This hypothesis is based on the transmission of the X versus Y chromosomes to the next generation, because loss of Slxl1 results in more male offspring and duplication of Slx and Slxl1 results in more female offspring. Thus, an imbalance of Slx/Slxl1 versus Sly can lead to male infertility, when both Slx and Slxl1 are lost, and sex ratio distortion when a subset is disrupted. To understand the mechanism of how Slx/Slxl1 competes with Sly to impact sex ratio, we will testSlx, Slxl1, or Sly interactions with the X-linked, amplified spindlin gene, Sstx, by performing yeast two-hybrid (Y2H) screens.We are testing for Y2H interactions with SSTX, because we have previously demonstrated interactions between proteins encoded by Slx (SLX), Slxl1 (SLXL1), and Sly (SLY1 and SLY2 isoforms)—with three other spindlin proteins — SPIN1 and SSTY1/2. We demonstrated SLX and SLY2 binding to SSTY2 andSLXL1 and SLY1 binding to SPIN1. We also showed two of these spindlins, SSTY1 and SPIN1, can bind to each other. We hypothesize that an additional, X-linked spindlin, SSTX will mimic this interaction and directly bind to SSTY2. However, it is plausible for SSTX to compete for binding to SPIN1 with SSTY1, or interact with SLX, SLXL1 or SLY1/2 proteins, and this conclusion will allow us to further investigate our currently known protein-protein interactions. Recognizing competition between X/Y-linked genes and their relationship to mice spermatogenesis will aid us in understanding the basic mechanisms of fertility.

Lanai, Madison

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Public Health

Author/Contributors:
Madison Lanai,
David Buckner,
Kennedy Carpenter

Abstract Name: **Designing A Metastatic Breast Cancer Support Program**

Currently, there is a significant lack of community-based support groups for individuals living with Metastatic Breast Cancer (MBC). The majority of breast cancer support groups exist for those who are breast cancer survivors, inadvertently overlooking those given a terminal diagnosis. Additionally, only about 2% to 5% of the funds raised for breast cancer research is spent towards breast cancer metastasis studies. The goal of our research is to create a patient-led, community-based support program for individuals living with MBC. This will require the collection of resources that address the specific needs of this community, which were identified through extensive literary research and comprehensive surveys. The survey we created assessed their backgrounds, capabilities, needs, and desires. Additionally, we conducted 15 one-on-one interviews with MBC individuals to gather information on their past support program experiences and program structural preferences.With this qualitative and quantitative data, we are currently developing the Charlotte MBC Program and plan on officially implementing the program in the spring of 2023. We have partnered with Carolina Breast Friends, a Charlotte-based nonprofit organization centered around providing support and resources to those who are affected by breast cancer. Carolina Breast Friends does not currently have any specialized services for those with metastatic breast cancer and partnering with this organization allows them to impact more lives within the breast cancer community. We plan on housing our program at their Pink House, a unique respite center for breast cancer survivors.

Lancaster, Delainey

Institution: *MN - University of Minnesota - Crookston*

Discipline: Biology

Author/Contributors:
Tsebaot Getachew *Delainey Lancaster* *Jenna Parfeniuk*
Madeleine Shwaluk

Abstract Name: **General Microbiology Students Searching for Antibiotics in Minnesota's Wetlands**

As antibiotic resistant pathogens continue to emerge, there is a dire need for the discovery and development of new antimicrobial agents. In Fall 2021,University of Minnesota Crookston General Microbiology students collected soil samples from wetlands of Northern Minnesota. They isolated and characterized the microbes to see if they have antimicrobial activity. Nineteen students were able isolate cultures that showed antimicrobial activity against the safe relatives of the ESKAPE pathogens. The current aim of the research is to conduct a longitudinal study to isolate and identify antibiotic-producing bacteria from bogs and fens collected from the previous student work. We hypothesized that some of the pure culture isolates would produce antimicrobial substances and show inhibition against the ESKAPE safe relative pathogens.Procedures followed the general protocols of the Tiny Earth-Studentsourcing Antibiotic Discovery Initiative. Soil samples were further analyzed using standardized techniques to identify the presence of potential antibiotic-producing microorganisms. Bacteria from these samples were transferred to isolates and tested against ESKAPE pathogens to show signs of antibacterial activity. Streak plates were created for all isolates showing antibacterial activity and incubated at room temperature to further separate the microorganisms to purity. This process was repeated until cultures reached purity. Pure isolates were then tested against ESKAPE pathogens to demonstrate inhibition. Pure isolates that showed inhibition underwent chemical fixation using acetone. Further testing is needed to isolate and extract the antimicrobacterial component. Further characterization of the twelve pure isolates that have antimicrobial activity will be reported. Findings from this research could aid in the development of antibiotics with new antimicrobial properties that can fight off pathogens resistant to current medications.

Landeau, Sarah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Sarah Landeau,
Grace Cunningham,
Emma Friesth

Abstract Name: **Food Environments and Healthy Communities: An Assessment of the Food Environment on the University of Wisconsin-Eau Claire Campus**

The foods we eat are a determinant of health and wellbeing, with nutrition as a key factor in the most prevalent chronic diseases in the United States including heart disease, obesity, and diabetes. Food environments, the physical, economic, and socio-cultural settings that play a role in what people choose to eat, are associated with diet-related health outcomes. In the university setting, campus food environments are an important determinant of what students eat which influences their quality of diet and nutrition status. To examine the food environment at the University of Wisconsin-Eau Claire (UWEC), students enrolled in a course titled “Food Environments and Healthy Communities” measured the availability and accessibility of healthful food options on campus using University of Pennsylvania’s Nutrition Environment Measurement Surveys. In a student-led approach, sampling boundaries were determined to include food outlets on campus and in the surrounding community. Survey data was collected and scored to provide quantitative data regarding the affordability and nutritional value of food fromvending machines, cafeterias, grab-and-go shops, restaurants, and stores. The data gathered will enable researchers to provide evidence-based recommendations to student senate, university administration, and city council, with the overall goal of improving the campus food environment such that students have equitable access to affordable and healthy foods which is key to health, quality of life, and educational success.

Lander, Taylor

Institution: *MN - Hamline University*

Discipline: Public Health

Author/Contributors:
Emma Moe *Taylor Lander* *Sam Thompson*
Savannah Lyytinen *Serena King* *Laura Palombi*

Abstract Name: **Community Engaged Partnerships With Southeast Asian Community Health Liaisons, Leaders, and Health Care Professionals: A Pilot Project on Opiate Awareness, Overdose and Psychoeducation**

Opiate addiction and overdose is a major public health concern that disproportionately affects minority communities, yet little is known about the impact in Southeast Asian communities.1) Pilot a sustainable program of opiate awareness, pharmaceutical awareness, and education in Southeast Asian (SEA) communities. 2) Assess community needs around opiate education, prevention, and medical care for opiate addiction, and 3) Engage professionals (stakeholders) on SE Asian community needs.A three-part model included: 1) A train-the-trainer psychoeducational program delivered by community health liaisons (CHLs), 2) Stakeholder engagement around SEA opiate prevention, overdose prevention/reversal, and care (medical, mental health, pharmacy, and Narcan distribution professionals) and 3) Guided conversations with community leaders. Training sessions were delivered virtually, whereas community sessions varied in their delivery methods (verbally in a community's native language). Three community health liaison training sessions involved a train-the-trainer psychoeducational model on the nature of opiates, drug effects, pharmacist-patient communication, stigma, and community comfort in discussing opiates. A pharmacy professor delivered five two-hour training sessions for the CHLs. We held stakeholder conversations with pharmacy students, physicians, addiction counselors, and clinic supervisors. Common barriers identified were funding and availability of translators, stigma, transportation, and community awareness of resources available. Significant needs exist in SEA communities. First, we observed a lack of knowledge and awareness around opiates across communities. Program materials delivered in a narrative format were useful (per leader feedback). Several leaders and community members expressed concern about the community proliferation of online purchases of drugs marketed as painkillers. Third, community members may lack awareness of risks around opiates and addictive potential. Cultural factors and stigma prevent community members from seeking information and treatment, and there is a need for Narcan education and linguistically and culturally competent providers.

Landers, Ashling

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ashling Landers *Benjamin McManus*

Abstract Name: **Burnout and Work-Family Conflict are Associated with Drowsy Driving Risk in Surgical Residents**

Driving while drowsy is associated with reduced driver's attention, reaction time, and decision making, ultimately costing the lives of hundreds of Americans in motor vehicle collisions annually. Burnout, or chronic workplace stress that has not been effectively managed, has been implicated as a factor associated with increased drowsy driving risk. A precursor to burnout may be work-family conflict. However, little research has been conducted on the risk factors for burnout and the subsequent association of burnout and drowsy driving among healthcare workers. This study examined the relationship of burnout and drowsy driving risk among surgical residents. Eleven surgical residents (Mage=28.9 years, 64% female), with 64% in their first two years of residency, completed the Epworth Sleepiness Scale as a measure of sleep propensity, or daytime sleepiness, where greater sleep propensity translates to a greater chance of drowsy driving. A single item quantified self-reported work-family conflict. Burnout was assessed using the well-validated Maslach Burnout Inventory that categorizes three dimensions of burnout: emotional exhaustion, depersonalization, and personal accomplishment. Residents also completed a 30-45 minute simulated night-time drive in a high-fidelity driving simulator and observational ratings of drowsiness (ORD) were conducted on video data from the drive. Job interference with residents' personal lives was positively correlated with depersonalization (r=0.80, 0.01) and increased sleep propensity (r=0.71, p=0.02). Both greater emotional exhaustion (r=0.63, p=0.04) and depersonalization (r=0.69, p=0.02) were also associated with increased sleep propensity. There was no association between burnout and ORD from the simulated drive. With an estimated prevalence of burnout at 50% among physicians, nearly twice that of the general working population in the United States, further investigation of this topic is required to improve mental health outcomes and driving safety of the American healthcare workforce.

Lang, Calla

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Calla Lang,
Krishnaveni Parvataneni,
Keerthana Dandamudi,
Sohail Zaidi

Abstract Name: **Impact of Argon DBD Plasma With and Without Oxygen Addition on Bacteria Mitigation**

Plasma, the fourth state of matter, may be created by passing a high voltage through a gas medium at low or ambient temperatures. Dielectric Barrier Discharge (DBD) plasma is a non-thermal plasma with ions and neutrals remaining at low temperatures and electrons at high temperatures. This process to create plasma splits molecular bonds, which creates free radicals, including Reactive Atomic Oxygen (RAO). This RAO reacts with water in the blood to produce Hydrogen Peroxide, H2O2. The hydrogen peroxide forms growth factors in the body and can then be used to lower activation energies and accelerate chemical reactions. This, in turn, can be applied to the mitigation of bacteria, specifically Escherichia coli (E. coli), which is the bacteria of interest in this experiment [1]. A plasma sheet generator was specially designed at San Jose State University for bacteria mitigation. In this configuration, the plasma sheet will take less time to scan the bacterial surface, as compared to a traditional plasma jet. To observe the impact of Oxygen addition on DBD Plasma, experiments have been conducted to find the amount of bacteria sterilized under various operating conditions (0-5% Oxygen gas in up to 15 slpm Argon gas). The O I Line at 778.97 nm and the OH line at 315.52 nm are predicted to have the highest impact on the formation of RAO, and thus the generation in H2O2. Further investigations on bacteria mitigation will be conducted, and the relative changes will be presented in full.
[1] https://pubmed.ncbi.nlm.nih.gov/31195444/

Lange, Ashley

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Emily Rush *Ashley Lange*

Abstract Name: **Examining Use of a Standard Structured Meeting Agenda to Improve Learning Outcomes for Instructional Interns**

BackgroundThe Instructional Internship (II) program at a Midwestern University was developed in response to the American Speech-Language-Hearing Association initiative to increase student recruitment into Ph.D. programs (ASHA, 2002) and designed to provide undergraduates with a teaching experience. This experience provides a glimpse into the daily life of a faculty member, including opportunities for teaching and mentoring students (Hemmerich, Hoepner,; Samelson, 2015). II roles are similar to that of teaching assistants. Typically, one or two IIs are assigned to a given course. IIs are undergraduate students that have already taken the course, earning an A-or better. Roles include leading weekly meetings, reviewing course content, responding to emails, and answering students' questions. IIs approach course content from a student perspective, increasing accessibility and reducing any power disparity. The experience changes II's perspectives on teaching and learning, has future implications for teaching clients/families, and develops interpersonal skills (Hemmerich et al., 2015). While associated with positive outcomes, individual experiences vary across instructors. Increasing consistency among instructors may increase consistency across II outcomes. Therefore, a standard structured meeting agenda was developed to increase inter-instructor consistency. The aim of the current study was to evaluate implementation of the structured meeting agenda. MethodsSpring 2022 IIs were recruited to participate in an online survey about their experiences with the structured meeting agenda. Quantitative results were analyzed through descriptive statistics. Open-ended responses were analyzed through collaborative qualitative analysis.ResultsMean ratings were calculated for scaled survey questions regarding use of the structured agenda. While no significant changes in approach to meeting agendas were noted, most instructors were already using a similar structured agenda. Open-ended responses were analyzed qualitatively. Instructors acknowledged that the structured agenda helped strengthen and guide the flow of the meeting, making meetings more focused, more interactive and supportive, increasing flexibility, and clarifying expectations.

Langhoff, Chris

Institution: *MT - Montana Technological University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Chris Langhoff,
Mary MacLaughlin

Abstract Name: **UAS Based Photogrammetric Analysis of a Rock Slope In Montana**

With UASs (Unmanned Aircraft Systems) becoming more and more integrated into the engineering toolbox, there are many different platforms and equipment to choose from to accomplish a given job. Many companies will claim their system for data capture and analysis is the best tool for the job. The focus of this research is to put some different UAS systems and data-capturing methods to the test from the standpoint of an engineer who may be analyzing these different methods to see what is most cost and time effective, what system is more accurate, as well as the learning curve. The research is focused on using two different aerial platforms (DJI Phantom 4 Pro, DJI Matrice 300) to capture data to then construct a point cloud of the research site. One platform (P4P) was fitted with a 4k camera to generate a point cloud using photogrammetry and the other (M300) used a Lidar scanner with an RGB camera for colorizing. The site was surveyed using a GNNS receiver and base station and was then flown on two different days in October 2022. The point clouds from each method will be processed with Pix4D photogrammetry software to do a geotechnical analysis of the research site. Point clouds from both Lidar and photogrammetry have been successfully generated and are accurate to within 3cm. The next step will be to process the point clouds for geotechnical analysis as well as go back to the site to take hand measurements for a traditional approach to Geotech analysis. All this will then be compared for accuracy within the models and field mapping approach while considering time and cost-effectiveness.

Langlois, Jordan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Tyler Pham,
Connor Kamrowski,
Jordan Langlois,
Cameron Senor,
Pavithra Devy Mohan,
Rahul Gomes,
Joseph Wildenberg

Abstract Name: **Deep learning Approach for Detection of Inferior Vena Cava Filters from CT Scans**

IVC filters (IVCF) perform the important function of breaking down blood clots. However, most IVCF are temporary, and delays in their removal can cause complications. Current tracking of temporary IVCF is performed manually,which can delay treatment if the patient transfers healthcare providers.This study proposes a pipeline to automate detection of IVCF. A patch-based 3D Convolutional Neural Network (CNN) is created using a database of patient's abdominal CT scans. The data is preprocessed using normalization techniques, along with a window/level to enhance the brightness of dense materials, which makes the metal IVC filter easier to detect. The database is split into training and testing, and patches are extracted from each. A postprocessing step is performed on the segmentation, where neighborhood connectivity is used to remove small objects. The scan is then classified as either IVC or non-IVC if the number of positive slices is greater than our selected threshold. The model's DICE score reached 0.93 for training and 0.81 for validation. The prediction pipeline was able to accurately detect scans with IVC filters 100% of the time. The false positive rate on scans from normal patients was also 0. The proposed IVCF filter prediction pipeline requires lesscomputing power while providing high accuracy, there by reducing the time needed to track IVCF in health records.

Lapour, Julian

Institution: *MN - Augsburg University*

Discipline: Economics

Author/Contributors:
Julian Lapour

Abstract Name: **Mapping Food Insecurity in Minnesota**

This study evaluates predictors of food insecurity rates across counties in Minnesota. As economic uncertainty in the US rises, hunger is becoming a growing problem that affects thousands of families across the state. According to data from the US Census Bureau's 2020 Pulse survey, 37% of Minnesotans reported experiencing some level of food insecurity. While previous research has identified the presence of food deserts in Minnesota - areas where geographic access to a grocery store is limited - this study utilizes data on cost of living to identify potential food mirages. A food mirage is an area where grocery stores are present, but inaccessible due to prices being higher than the surrounding neighborhood can support. In order to identify these areas, an OLS regression was conducted. After comparing cost of living data, data on the availability of grocery stores per county, and several other factors, it was found that cost of living in a county has a stronger correlation with food insecurity rates than the number of grocery stores. In addition, multiple counties in Minnesota identified as outliers by this regression could potentially be suffering from the situation of a food mirage. These results have some implications on future research and economic policy. A more precise method of measuring the prices of food in a neighborhood - rather than a county - would better be able to recognize the relationship between prices and food insecurity, and may then identify other areas in Minnesota where a food mirage exists. Once these areas are found, economic policy could be able to reduce food insecurity by focusing on increasing the affordability of groceries in that neighborhood.

Larson, Alexandra

Institution: *FL - The University of Tampa*

Discipline: Biology

Author/Contributors:
Alexandra Larson,
Louis Ambrosio,
Anngelyk La Luz,
Keegan Rankin,
Carlos Santamaria

Abstract Name: **First report of the introduced isopod Ligia exotica Roux, 1828 in rocky intertidal habitats of Midway Atoll, Papah?naumoku?kea Marine National Monument as confirmed by morphological and molecular approaches**

The Papahānaumokuākea Marine National Monument (PMNM) is one of the world's largest marine protected areas and covers marine habitats as well as the islands and atolls of the Northwestern Hawaiian Islands. Despite its protected status, the biodiversity of the PMNM face several threats to its preservation, including the presence of introduced species. Given its history as a shipping and military outpost, Midway Atoll represents a potential entry point for introduced species to the PMNM. Thus, monitoring for new introduced species in Midway is of importance for the management and preservation of the PMNM. In this study, we use morphological and molecular approaches to confirm the presence of the coastal isopodLigia exotica, a species of Asian origin that has been introduced to coastlines around the world, in Midway Atoll and thus the PMNM. The presence ofL. exoticain Midway Atoll is of concern as islands of this marine monument harbor endemic species ofLigiaisopods.

Larson, Hanna

Institution: *MN - University of Minnesota - Duluth*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Hanna Larson,
June Lee,
Daehyoung Lee

Abstract Name: **Virtual Reality Exercise Effects on College Students with Anxiety and Depression**

Mental health has been an extensive concern across college campuses, especially coming out of the COVID-19 pandemic (Lipson, et al., 2022). Left untreated, anxiety and depression can have an impact on college students in all areas of life, not just in the classroom (Adams et al., 2016). Using virtual reality (VR) to provide an alternative exercise environment can alleviate additional stressors of beginning and adhering to an exercise regimen for those who struggle with mental health. The purpose of this study is to investigate the physiological and psychological effects of VR biking exercises on college students with anxiety and/or depression. Thirty participants (18-22 years of age) will be recruited via emails and flyers across the University of Minnesota Duluth campus. Participants will perform 20-minute biking sessions under each of the following conditions: (1) VirZoom immersive VR exercise bike; (2) NordicTrack Grand Tour non-immersive VR exercise bike; and (3) VirZoom bike without VR system (traditional condition). Participants' heart rate and rate of perceived exertion (RPE) will be measured every 4 minutes during each session, and their anxiety and mood will be measured before and after each of the three biking sessions. For statistical analysis, a repeated two-way ANOVA will be conducted. It is hypothesized that heart rate and RPE will be different between the VR exercise and traditional exercise sessions; and immersive VR exercise will result in a significantly greater improvement in psychological variables than both non-immersive VR and traditional exercise. The results of this study may lend themselves to improved long-term exercise adherence in individuals suffering from mental illness, as they can perform engaging workouts from the comfort of their home.

Lash, Anna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Lesley Mayne *Karsten Powell* *Anna Lash*

Abstract Name: **Ask the Parents! What Preservice Teachers Learned about an AAC User**

This mixed methods research study investigated how preservice teachers' perceptions of children with complex communication profiles (CCP) change when given parent-provided information. This important research highlights the value of parents' expert knowledge of unique communication modalities (e.g., technology and nonverbal) that support a team of educational professionals. Previous research shows teachers lack knowledge about their students' communication modalities and competencies, including AAC tools (Costigan; Light, 2010). Parents of children with CCP have vast amounts of insight into their child's personality and nature of communication (Cress, 2004; Marshall; Goldbart, 2008) which can shape teachers' capacity to communicate with their child. Data was collected from undergraduate education majors (n=86) enrolled at the University of Wisconsin-Eau Claire. Procedures included showing a video of a child with CCP, a pre-intervention survey, the Hear Me into Voice (Mayne; Rogers, 2020) protocol to showcase parent expertise, the same video, and a post-intervention survey. The following research questions were addressed: (a) How does pre-service general and special education teachers' efficacy for communicating with an individual with a complex communication profile change after reading a parent-reported narrative about their child? (b) Based on a video depicting an individual with a complex communication profile, how do pre-service general and special education teachers describe the individual before and after reading a parent-reported narrative about the child?Data analysis to date indicates statistically significant findings were yielded demonstrating improved efficacy for preservice teachers' communication with a person with a CCP. An example being the quality of conversational topics that preservice teachers increased after reading the parent reported narrative. Data analysis is still being completed. Further quantitative and qualitative analysis on other pe- and post- survey questions will be discussed at NCUR.

Laskowski, Christiane

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Christiane Laskowski,
Jared Mayrand

Abstract Name: Analysis of Gene Expression in Mutant Strain of Alga Chlamydomonas reinhardtii Under Low-Nitrogen Conditions

Nitrogen is an essential element for life, especially for photosynthetic organisms, such as plants and algae, that have nitrogen-rich chlorophyll. Nitrogen depravation leads to various physiological and metabolic changes; thus, its supplementation with fertilizer is necessary for proper growth, particularly for crop plants, which leadsto high financial and environmental costs. In 2020, we reported a mutant strain of the green alga Chlamydomonas reinhardtii that maintains high growth in low-nitrogen media. Genetic crossing and genomic sequencing have revealed that the tolerance-to-low-nitrogen phenotype (TLN) is a heritable trait due to a recessive mutation. Further, the possible genetic source of this mutation has been narrowed down to two candidate genes: the firstis predicted to encode a transcription factor, and the second, a predicted RNA-binding protein. The aim of this study is to further investigate the involvement of these genes in the TLN phenotype by evaluating their expression within the first two days following exposure to low nitrogen. Two cultures each of the mutant (TLN1) and wild-type (WT) strains were grown in both regular TAP media and 10% nitrogen media (N10). Cells were harvested at day 0, 0.5, 1, and 2, and total RNA was isolated and purified. RT-qPCR will be used to assess the RNA expression of each gene at the specified times. It is expected that the RNA levels of the candidate genes will differ significantly between the WT and TLN1 strains in N10 media, which would provide supporting evidence for their involvement in the TLN phenotype.

Latvala, Maia

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Megan Schmitz,
Julia Karls,
Brandon Kviz,
Elianna Zimmerman,
Maia Latvala

Abstract Name: "I get physically ill when I think about us?: Making sense of memorable breakup messages

All relationships have a beginning; some have an end. The experiences we have as we disengage from relationships influence our understanding of those relationships. To better understand the memorable messages that individuals received during romantic relationship breakups, we sought to answer the following questions: What is the significance of memorable breakups? Which words or phrases are consistently remembered during a breakup? Do memorable messages usually come from the person breaking up or the person being broken up with? To answer these questions, the research team conducted 16 semi-structured interviews; participants were recruited via convenience sampling. Thematic analysis techniques (Nowell, Norris, White; Moules, 2017) were used to identify the following themes: Many of the reasons for a breakup appealed to an individual's desire for independence as they looked toward the future. Many memorable breakups also had connections with an individual's family or friends' disapproval of the relationship. In general, negative or harmful relationships yielded negative breakup memories while healthy relationships usually yielded more positive or mutual disengagement conversations. As participants reflected on a memorable breakup and pondered future breakup communication they would execute, every individual mentioned something they learned from in their memorable breakup.

Lau, Alexander

Institution: ***CA - Aspiring Scholars Directed Research Program***

Discipline: Physics/Astronomy

Author/Contributors:
Vineet Rao *Harsh Ambardekar* *Alexander Lau,*
Sanjay Ravishankar *Christopher Lau* *Robert Downing*

Abstract Name: Analysis of Stellar and Exoplanetary Attributes to Determine the Feasibility of Carbon Based Life in Exoplanets

Over the past few decades, the search for a counterpart to Earth has only increased in prominence, with reliable data from satellites such as Gaia and datasets like the NASA Exoplanet Archive providing more possibilities for habitability than ever before. Searching for habitable exoplanets is crucial because it gives us insight into the early history of our solar system and potential theories of primitive life formation on Earth. The main criterion for an exoplanet's habitability is its ability to host liquid water. This depends on many characteristics unique to each exoplanet and its host star, all of which must work together to create an environment capable of sustaining carbon-based life as we know it. Our research aimed to analyze the habitability of the exoplanets in the NASA Exoplanet Archive by determining if the exoplanets resided within their host stars' circumstellar habitable zone (CHZ). To accomplish this, we first removed entries considered controversial or redundant to ensure accuracy in our data. We then calculated each host star's bolometric luminosity to determine the inner and outer bounds of its CHZ and see if its exoplanet was within the region. We hypothesized that all of the exoplanets we found to be habitable would have eccentricities less than or equal to 0.4 and host stars with surface temperatures less than or equal to 7500 K. Based on our results, all of the exoplanets we deemed habitable had host stars with temperatures less than or equal to 7500 K; however, some had eccentricities greater than 0.4, thus disproving our hypothesis. We then compared our data with the NASA Planetary Habitability Laboratory (PHL) Dataset and found three exoplanets in common: Kepler-1649c, Kepler-174d, and Kepler-62f. Furthermore, our results yielded an extra 50 exoplanets as potential contenders for habitability in addition to NASA's findings.

Lau, Chris

Institution: ***CA - Aspiring Scholars Directed Research Program***

Discipline: Physics/Astronomy

Author/Contributors:
Vineet Rao *Harsh Ambardekar* *Alexander Lau*
Sanjay Ravishankar *Christopher Lau* *Robert Downing*

Abstract Name: Analysis of Stellar and Exoplanetary Attributes to Determine the Feasibility of Carbon Based Life in Exoplanets

Over the past few decades, the search for a counterpart to Earth has only increased in prominence, with reliable data from satellites such as Gaia and datasets like the NASA Exoplanet Archive providing more possibilities for habitability than ever before. Searching for habitable exoplanets is crucial because it gives us insight into the early history of our solar system and potential theories of primitive life formation on Earth. The main criterion for an exoplanet's habitability is its ability to host liquid water. This depends on many characteristics unique to each exoplanet and its host star, all of which must work together to create an environment capable of sustaining carbon-based life as we know it. Our research aimed to analyze the habitability of the exoplanets in the NASA Exoplanet Archive by determining if the exoplanets resided within their host stars' circumstellar habitable zone (CHZ). To accomplish this, we first removed entries considered controversial or redundant to ensure accuracy in our data. We then calculated each host star's bolometric luminosity to determine the inner and outer bounds of its CHZ and see if its exoplanet was within the region. We hypothesized that all of the exoplanets we found to be habitable would have eccentricities less than or equal to 0.4 and host stars with surface temperatures less than or equal to 7500 K. Based on our results, all of the exoplanets we deemed habitable had host stars with temperatures less than or equal to 7500 K; however, some had eccentricities greater than 0.4, thus disproving our hypothesis. We then compared our data with the NASA Planetary Habitability Laboratory (PHL) Dataset and found three exoplanets in common: Kepler-1649c, Kepler-174d, and Kepler-62f. Furthermore, our results yielded an extra 50 exoplanets as potential contenders for habitability in addition to NASA's findings.

Laubach, Leann

Institution: *OK - University of Central Oklahoma*

Discipline: **FAN Abstract**

Author/Contributors:
Susan Barnes,
Leann Laubach

Abstract Name: **Engaging Undergraduate Students with Animal Assisted Therapy Activities, Outreach, and Research**

Animal Assisted Therapy (AAT) is a recent phenomenon in the research literature with the first reports appearing just over 20 years ago. The current and popular trend of embedding certified animals into the higher education system is based on the overwhelming popularity of the practice and on the positive outcomes of research endeavors related to the activity. This presentation will be a discussion of how the AAT program at the University of Central Oklahoma Department of Nursing has been shown to be an effective strategy to improve the mental outlook and modify stress of students and faculty. Not only does AAT provide modify stress, it provides opportunities for students to engage in research, conduct independent research, and assist in the care and management of the dogs. This is hands-on approach is a very effective approach to teaching research methodologies, and helps students learn the importance of complementary and alternative health interventions. Topics to be addressed in this talk include barriers to animals on campus as well as the expense associated with such programs. Although the dogs initially arrived on campus Fall of 2019, the pandemic prohibited the practice of AAT for the next 18 months.Once restrictions were lifted, the program began to develop quickly, with undergraduate research students given an option to do AAT research.Acquisition of grant funding to add a dog to the team led to a group of students who participated in training and socialization of the new dog.This spring will be the second-year students will be presenting evidence-based practice and/or research findings that involves the AAT Dogs. Animal Assisted Therapy, Undergraduate Research, Nursing Students, Stress Modification, Complimentary Health Approach

Laufenberg, Caleb

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Public Health**

Author/Contributors:
Caleb Laufenberg,
Ryan Mohr

Abstract Name: **UWEC Campus Environmental Monitoring of PM 2.5 using Purple Air Monitors during residence hall demolition**

During September and October 2022, construction crews conducted demolition projects on two residence halls (Putnam Hall and Katherine Thomas Hall) on the University of Wisconsin- Eau Claire campus.Elevated PM 2.5 levels on campus could present a risk of throat and lung irritation, decreased respiratory function, and long-term health impacts to students, faculty and the workers on this project. Two EPA- and Wisconsin Department of Natural Resources-testedPurple Air monitors provided real-time monitoring of PM 2.5 levels in two locations on campus within 50 meters of the worksites. Hourly PM 2.5 measurements from each Purple Air monitor were corrected using the EPA correction factors and graphed alongside PM 2.5 measurements recorded by the WDNR, which served as a control. Periods when demolition activity occurred were established and detailed in data. Environmental monitoring was conducted to determine if the demolition activity was a source of increased PM 2.5 pollution as a health risk to the general campus population of students, staff, and faculty. The hourly and average PM2.5 levels measured on the UWEC campus were typically higher than the WDNR monitor between September 5th and October 5th, 2022. However, increases during or immediately following demolition activities were not apparent.

Laughter, Ben

Institution: *UT - Weber State University*

Discipline: Nursing/Health Science

Author/Contributors:
Misia Farnsworth *McLayne Arnold* *Ben Laughter*
Cameron Clark

Abstract Name: **Viability of Trypanosoma cruzi in RBCs at cold storage temperatures**

Chagas disease (American Trypanosomiasis) is caused by the protozoa Trypanosma cruzi. Chagas disease affects approximately 10 million people in Latin America, manifesting in pyrexia, malaise, splenomegaly, and cardiomyopathies. T. cruzi is commonly spread through the infected feces of the 'kissing' bug. After insect bites, blood transfusion is the second most frequent mode of transmission. The Center of Disease Control (CDC) estimates in the US, around 300,000 individuals are infected with T. cruzi, causing a considerable disease burden. The goal of this research will be to study the viability of T. cruzi in packed red cell aliquots stored at various cold temperatures to study parasitemia. If successful, storage of packed red cells in cold temperatures will show reduced viability of infectious T. cruzi; creating a simple adjustment to current prevention methodologies furthering the reduction of transfusion-transmitted American trypanosomiasis.Warming temperatures can shift the distribution of triatomine insects, allowing the spread of the disease to non-endemic areas such as the United States as climates become more favorable. Pollution, insecticide resistance, and tourism are additional factors that may contribute to this threat. Means to prevent trypanosomiasis from blood products will become pertinent with this change.Routine screening of blood-donors using a questionnaire has reduced the incidence of contracting trypanosomiasis in non-endemic areas. Serological testing is not mandatory outside endemic areas because it is suspected that the number of T. cruzi-infected donors is small, and screening each donor would not be cost-effective. Although the questionnaire has been effective, it fails to screen asymptomatic carriers resulting in transfusion-transmitted infections.To mimic organ-donor tissue, cultures stored at low temperatures have shown a reduction of trypanosomes. Past research has explored cold storage on the viability of Babesia in blood bags. Minimal research has been conducted on the viability of T. cruzi in blood stored at cold temperatures

Lavan, Vatanak

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Vatanak Lavan

Abstract Name: **COVID-19 Pandemic Data Analysis: Does Income Affect Mortality Rate?**

The ongoing COVID-19 pandemic is one of the deadliest disasters in United States history, ranking first with a death toll of over 1,000,000. While pandemics affect people regardless of wealth, they hit the poorest people the hardest. This one is no exception, as it has disrupted every area of the country's healthcare system and has had a devastating impact on poor and low-income communities. In an effort to better understand and support at-risk populations across America, we investigate how income has affected mortality rates during the pandemic at the county level. This study was conducted with the R language and its respective IDE, RStudio, which offer powerful, statistical tools to support data science. Data was used from two sources. The simplemaps US Counties Database contains comprehensive census data for 3,234 counties with up to 78 fields as of May 13, 2022. Our own COVID-19 database has been tracking cases and deaths for 3,223 counties since the start of the pandemic on Jan 21, 2020 until now.After establishing connections to the databases using a MySQL Connector/ODBC driver, each dataset was imported via SQL queries as Data Frame objects. Once in the R environment, they are filtered for noisy data, non-US counties and missing values. The two tables are joined according to their county FIPS codes. Deaths per 100,000 people as well as case-fatality ratio are calculated for each county. By analyzing and visualizing the data, we find a possible negative correlation between county median household income and COVID-19 deaths. However, other likely variables associated with lower socioeconomic status will be investigated, as they could place these populations at higher risk of dying to COVID-19. This includes pre-existing conditions (diabetes, heart disease, obesity, etc.) and lack of health insurance.

Law, April

Institution: *UT - Utah Valley University*

Discipline: Psychology/Neuroscience

Author/Contributors:
April Law

Abstract Name: **Using Facebook and Reddit to code support group member posts: What we can learn about the needs of patients with Postural Orthostatic Tachycardia Syndrome (POTS)**

Many patients with chronic illnesses feel that they lack resources when it comes to finding knowledgeable specialists, helpful consumer products, and support for loved ones. This research project aims to bridge the gaps of understanding between patients and their families and medical professionals by observing common patient complaints and requests for advice on social media platforms. By coding these responses and looking for commonalities, manufacturers may also benefit by learning to create better products that serve the needs of chronically ill patients. Similar studies have been performed for other areas of research. Sutter et al. (2021) used Facebook and Reddit to code for food parenting posts. They categorized food parenting styles that were coercive, structured, or autonomy supportive. They found a correlation between food parenting styles and children's unhealthy eating habits and adiposity (Sutter et al., 2021). A social media study was conducted in Canada to determine social levels of hesitancy toward COVID-19 vaccines (Rotolo et al., 2022). Most Canadian citizens have been vaccinated, and researchers believe that the results of this study can help guide educational attempts for unvaccinated citizens (Rotolo et al., 2022). Perry and Park (2021) performed a qualitative analysis of Twitter feeds to search for major themes of suicidality and found that while intrapersonal and interpersonal factors were amply expressed, about half of the tweets expressed suicidality when discussing social issues such as health and politics.This study will compare posts from Facebook and Reddit to search for commonly used keywords among patients in support groups for Postural Orthostatic Tachycardia Syndrome (POTS). After posts are qualitatively coded, a statistical analysis will be performed. By discovering the most discussed support group topics, doctors, manufacturers, and loved ones can better understand the needs of patients with POTS.

Lawrence, Alison

Institution: *IL - Augustana College*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Alison Lawrence

Abstract Name: **Flipped Medicine: A Guide to Deconstructing the Normative Patient Model**

Historically, medicine has centered on a singular model: that of the white, cisgender, heterosexual, young, abled, middle-class male. While it is well-documented that patients of diverse identities often present differently in clinical settings, medical education continues to use this dominant, normative model as the standard for all patients while ignoring marginalized groups in their curricular resources. Normative medical educational practices systematically reinforce bias at the institutional level, causing even well-intentioned providers to be ill-equipped to diagnose and treat diverse bodies. Rectifying our society's deeply ingrained healthcare disparities will require active acknowledgement of the medical field's role in reinforcing discrimination, starting with a diversity-centered reexamination of our medical education system.Flipped Medicine: A Guide to Deconstructing the Normative Patient Modelbegins this conversation by challenging the validity of the normative patient model and inviting providers to critically engage with bias in medical education. This resource "flips the script" on the normative patient model by reimagining basic lessons on heart attacks, CPR, cyanosis, and EKG lead placement as if a currently marginalized group were considered the norm. For instance, Flipped Medicinecenters its description of heart attacks on the "silent" symptoms typically experienced by female patients, such as indigestion and fatigue, instead of the predominantly male experience of chest pain. This reversal of hegemonic narratives draws attention to the fragility of the normative patient model, calling into question society's construction of "normal."Rather than simply call for change, I proposeFlipped Medicineas a tool for reflection, self-critique, and systemic challenge. By imploring medical professionals to reflect on hidden biases, this resource sparks recognition of normativity in medical education and imagines a future where medicine is inclusive and integrated.

Lawrence, Kristy Beth

Institution: *TN - Trevecca Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kristy Beth Lawrence *Renlyn Loila* *Weston Cecil*

Abstract Name: **Social Connectedness and its Association with Mood, Resilience, and Well-Being in College Students**

College students often experience adversity which can be difficult to overcome based on inherent mental and psychological traits. Students with elevated social connectedness appear to overcome adversity due to having higher levels of mood, well-being, and resilience.In previous studies, positive emotions and social belonging supported the health of the parasympathetic nervous system. These factors seemed to feed into the self-sustaining upward spiral of growth and overall physical health. Social connectedness was found to be a significant mental health factor with impacts across diverse areas of physical and mental health. One hundred and eighty-nine students between the ages of 18 - 34 at a private liberal arts university in the southeast participated in the current study. Data collection was based on face-to-face surveys from lower and upperclassmen from diverse majors. The Positive and Negative Affect Scale, Ego-Resilience Scale, Mental Health Continuum Short Form, and the Social Connectedness Scale Revised were the instruments administered. The purpose of this study was to explore the relationship between mood and social connectedness, resilience and social connectedness, and lastly, well-being and social connectedness. The first hypothesis predicted a positive correlation between mood scores and social-connectedness scores, the second hypothesis predicted a positive correlation between resilience scores and social connectedness scores, and the third hypothesis predicted a positive correlation between well-being scores and social connectedness scores. All three hypotheses were supported. It was found that mood and social connectedness scores were significantly positively correlated, resilience and social connectedness scores were also significantly positively correlated, and finally, well-being scores and social connectedness scores were significantly positively correlated. Results of the current study were consistent with existing literature. Recommendations, implications, and limitations are discussed.

Layno, Joaquin

Institution: *NC - Western Carolina University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Keanu Ammons,
Nicholas Eckert,
Joaquin Layno,
Channa De Silva

Abstract Name: **Nuclear Fuel Remediation: A Computational Study**

Increased global attention on sustainable energy initiatives sparked renewed, global interest in nuclear energy. However, asignificant pitfall of nuclear energy is the production of high-level nuclear waste (HLW) with an extensive half-life. HLW waste storage poses a significant environmental and security risk. Remediating spent nuclear fuel (SNF) using nitrogen and sulfur-based chelation agents is a promising venture for recycling HLW into usable fuel or stable, nonradioactive compounds. This research paper aimed to perform computational studies on various nitrogen and sulfur chelation agents to determine if such agents are viable options for SNF remediation. The 6-31G(d) and MWB60 basis sets were used with Gaussian simulation software to perform computational simulations on viable chelation agents. Of the various agents studied dimercaperol, diethylenetriamene pentaacetate, and ethylenediaminetetraacetic acid appear to be the most promising in producing stable compounds from SNF byproduct. Thermodynamic and thermochemical properties of independent molecules were analyzed and documented to determine if stable compounds are possible. Lanthanide and actinide molecules were analyzed and documented for future research. Current simulations indicate promising results for dimercaperol in producing stable compounds for remediation; future research on this topicshould aim to understand if newly discovered compounds are applicable to industrial waste treatment processes.

Lazos, Nidia

Institution: ***KS - University of Kansas***

Discipline: Psychology/Neuroscience

Author/Contributors:
Nidia Lazos,
Sarah Wood

Abstract Name: Influences on Farmer Perceptions of Specific Farming Practices

Previous research suggests that specific farming management practices can have a big impact on water quality and understanding what influences farmers to engage (or not) in these practices is important (Liu, Bruins,; Heberling, 2018). Hundreds of studies have been conducted showing the impact of social norms on a variety of environmental conservation behaviors (Passafaro, Livi,; Kosic, 2019). My research was looking to identify what management practices farmers are currently using and whether the use of these practices were related to their perceptions of what most other farmers are doing (descriptive social norm) and their perceptions of what most other farmers think about these practices (injunctive social norm). I created an online survey asking farmers to indicate what farming practices they use and to estimate how many of the farmers around the area they think also use the practices and whether other local farmers approve of the practices. Only 8 farmers responded to the survey. Results suggested that the sample was not representative and was using the best management practices at a considerably higher rate than the local community. Gathering responses from farmers was difficult but point to several recommendations for future researchers. Gathering data from farmers over longer periods of time and outside the summer months is important. Also developing a more comprehensive plan to connect with farmers by building relationships and holding events would be likely to increase farmer engagement with projects like these.

Le, Chan

Institution: ***CO - Regis University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Chan D. Le,
Lynetta M. Mier

Abstract Name: Investigation of Photoproducts from the Reaction Between Deoxynucleotides in DNA and Excited-State Lumazine

Lumazine (2,4-(1H, 3H)pteridinedione) is a derivative of the family pterins, a group of compounds that are present in a variety of biological systems. Though not harmful in its ground state, lumazine was found to possess the ability to initiate selective cell death, making it incredibly attractive as a potential photodynamic therapy (PDT) agent. Unfortunately, the mechanism through which it causes apoptosis remains unknown. In other PDT therapies, two types of photosensitized oxidation reactions leading to degradation of biomolecules were identified: type I and type II. Type I involves an excited-state electron transfer between the sensitizer and a nearby biological molecule. If this pathway occurs between lumazine and a nucleotide, the resulting radical nucleotide is expected to undergo a series of reactions that result in cell death. The other proposed mechanism, type II cell death, involves an energy transfer between the excited sensitizer and oxygen, resulting in reactive singlet oxygen ($^1O_2$) that catalyzes reactions that can fragment proteins, nucleotides, and other molecules in the cell. Though type I is suspected to be dominant for lumazine, type II's competition and contribution are both possible and concerning. In this study, we aim to identify and quantify the products of the reaction between the excited state of lumazine and monomeric deoxyguanosine monophosphate (dGMP) and deoxyadenosine monophosphate (dAMP) using absorbance spectroscopy and high-performance liquid chromatography (HPLC) with and without oxygen and with varying exposure times to light excitation of lumazine. The study aims to deepen our understanding of the interaction between excited-state Lumazine and DNA molecules and provide valuable insights to improve the efficiency and mechanism of future PDT drugs.

Le, Hoang

Institution: ***PA - Lafayette College***

Discipline: Economics

Author/Contributors:
Hoang Le

Abstract Name: Wealth Begets Wealth: Intergenerational Correlations of Housing Wealth Inequality

This research will evaluate the effect of parents' housing wealth on their children's housing wealth in adulthood. Wealth is associated with a wide range of outcomes. Higher levels of wealth increases access to more favorable terms for credit, provides economic security to take risks, and shields against transitory fluctuations and shocks to the labor market. Given the importance of housing wealth for middle-income households in the United States, the persistence in housing wealth is likely a large factor in the intergenerational transmission of total household wealth. Previous research has examined the correlation of overall wealth across generations. However, few papers have studied the intergenerational relationship in housing wealth specifically. This paper contributes to the literature by using the Panel Study of Income Dynamics (PSID), a nationally representative panel dataset with information on parent and children's wealth, to estimate the relationship between parent and child housing wealth ranks. I expect that an increase in parents' housing wealth position is associated with an increase in their offspring's housing wealth position in adulthood. I will then document the extent to which channels of wealth transmission can explain the correlation in housing wealth across generations. These channels include earnings, asset ownership, marriage, bequests, and education. I expect that income and assets are central in this process, accounting for most of the parent-child housing wealth correlation. These results would suggest that parents' housing wealth becomes more important for predicting their children's housing wealth as overall U.S. wealth inequality increases.

Le, Linh

Institution: ***WA - Seattle University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Wan Bae *Linh Le* *Angelo Alfonso*
David Stanko

Abstract Name: Improving the Classification Performance on Small-Sized and Imbalanced Datasets

Predicting rare but high-impact events is critical in many medical applications, such as health risk prediction and disease diagnosis. While sensor technology has improved rapidly in the last decade, machine learning (ML) techniques for the prediction of rare events lag behind general prediction models.Most optimization techniques used to train ML models implicitly assume a balanced distribution of events in training data. This research focuses on improving the performance of classifiers on imbalanced and small-sized individual asthma patient datasets using oversampling techniques, as these issues significantly affect medical datasets in healthcare applications.Imbalanced data causes the classifier to be biased toward the class with more data samples (the majority class), reducing its accuracy for minority class data. The class imbalance problem is particularly challenging in the medical domain because the goal is to predict whether a patient is at risk for a particular disease. However, these cases are often in the minority class. Moreover, machine learning-based classifiers require a large amount of data to be adequately trained. Therefore, having a small-sized training dataset is also an obstacle because it hinders the classifier's performance.To improve the performance of prediction models on imbalanced and small-sized asthma patient data, we first investigated existing synthetic minority oversampling technique (SMOTE) variants at the data level. SMOTE variants solve the class imbalance problem by generating synthetic data samples and adding them to the minority class data until the classes are balanced. We proposed three new minority oversampling techniques: Incremental K-Means Clustering (IKC), SMOTEBoost and SMOTEBoost with Control Coefficient (SMOTEBoost and SMOTEBoostCC), and Average Neighbor Vector Oversampling (ANVO). We evaluated the effectiveness of the proposed techniques compared to the existing SMOTE variants. The evaluation results show that the proposed methods are comparable with state-of-the-art oversampling methods.

Leahy, Matthew

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Matthew Leahy

Abstract Name: **Tectonic Setting in the 1.9 Ga Eau Claire Volcanic Complex, Eau Claire County, WI**

The Eau Claire Volcanic Complex is part of the 1.9 billion-year-old Penokean Volcanic Belt (PVB) which contains numerous base and precious metal deposits. The discovery of metallic deposits requires the evaluation of tectonic settings. For example, many other metallic deposits PVB are a part of an ancient submarine rift. This study focuses on the Eau Claire Volcanic Complex and seeks to determine its tectonic setting. This region has not been evaluated in depth since the 1980s, and its tectonic setting and potential for metallic deposits is poorly understood. This research involved mapping and sampling bedrock exposures of the Eau Claire Volcanic Complex along the North Fork region of the Eau Claire River. Twenty-four samples were collected from the North Fork region for petrographic and geochemical analyses. Mapping results describe metamorphosed supracrustal sediments, volcanic gneisses, and foliated granodiorite to tonalite intrusions. These outcrops were cross-cut by a series of post-orogenic pegmatite intrusions. Trace element geochemistry is used to interpret the composition of protoliths and mineralogy of heavily metamorphosed and deformed rocks, while primary rock fabrics seen in thin sections will aid in interpretations of protoliths. Results from geochemical data will aid in deciphering tectonic events. Preliminary data from other regions around Eau Claire County, such as Big Falls County Park, constructs a baseline for this project's geochemical interpretation.

Leahy, Vincent

Institution: *SD - Black Hills State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Vincent Leahy,
Hunter Lindberg,
Yun Seok Choi

Abstract Name: **Collaboration Between Protein Science and Artwork**

Proteins are a main player for biological functions. Understanding protein science is essential for students majoring in biological sciences. Currently more students are not pursing a STEM career due to lack of resources, opportunities, and general difficulty of STEM classes according to a survey by Pew Research Center. After the Covid Pandemic many students had less interest in science due to learning online. We have developed a protein expression and purification procedure to create a high visual method to draw in student interest via chromoproteins. The plasmids with purple, lime, or pink chromoprotein genes were transformed into E. coli. While the E. coli with the plasmid expressed chromoprotein, students observed the chromoprotein expression by the purple, lime, or pink color. After the chromoprotein expression in E. coli, the chromoproteins were purified using a his-tag affinity column chromatography. In the purification step, students could easily follow when the chromoproteins bound to the column and eluted from the column. Following the purification of the chromoproteins, students used paint brushes and paper to paint images. Once the dye had dried, the chemicals in the chromoprotein buffer crystalized and formed in the brushstrokes, making a unique style of art observed in this protein dye painting. This method facilities a visually pleasing and enjoyable experiences to encourage scientific learning. Furthermore, this procedure is a great introductory practice for protein science and is also a unique collaboration between art and science.

Lecher, Blade

Institution: ***WI - Chippewa Valley Technical College***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Blayde Lecher,
Shawn Janvrin,
Paul Schierenbeck,
Egor Morozov

Abstract Name: **Political Divide**

The current climate in the US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What informaiton is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingness to accept otherswith different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political group discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

LeCleir, Adam

Institution: ***WI - Chippewa Valley Technical College***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Olivia Felix,
Carrie Andersen,
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Adam LeCleir,
Madison Schultz

Abstract Name: **Political Divide**

The current political climate in teh US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Lee, Carrie

Institution: *NC - Western Carolina University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Carrie Lee,
Alex Sharpe,
Nuwan Perera

Abstract Name: **Investigation of Weathering on Automotive Clear-Coat Formulations Using Fourier Transformation Infrared Spectroscopy (FTIR) for Forensic Purposes**

Traces of automotive paint are often left behind at hit-and-run scenes. One of the most commonly employed techniques used to analyze paint chips is Fourier transform infrared spectroscopy (FTIR), in which the resulting spectrum acts as a fingerprint that can be compared to samples from suspect vehicles. The Paint Data Query (PDQ) database was created by the Royal Canadian Mounted Police in order to simplify the identification of unknown samples. A problem arises when using the database because it may include the spectra of non-weathered or less-weathered samples. Paint from vehicles that have been exposed to weathering conditions have shown significant changes to their spectra. Because of this, samples collected from crime scenes could be easily misidentified. Through the systematic comparison of weathered clear coats to unexposed clear coats, it is possible to determine specific weathering patterns for clearcoats of different chemical compositions. Once these patterns and the chemical links between them are determined, forensic scientists will be able to more accurately identify the source vehicle of the sample. The purpose of this research is to explore those weathering patterns by comparing the compromised outer layer of the clear coat to the nondegraded or less degraded portion of clearcoat underneath in order to understand the chemical changes that occur during the weathering process. Our current results show that the chemical changes of weathering are primarily due to the breakage of the crosslinkers of the polymers of clear coats and the formation of amines is evident in the comparisons of FTIR spectra. Currently, the chemical changes of different clearcoat formulations are being investigated using automotive paint samples collected at auto body shops' junk yards.

Lee, David

Institution: *UT - University of Utah*

Discipline: **Economics**

Author/Contributors:
David Lee

Abstract Name: **What Changes Voters' Perceptions of Inflation**

This paper examines the effect climate change narratives have on households' inflation expectations. Economic agents, especially households, exhibit substantial heterogeneity in their expectations about macroeconomic outcomes. Specifically, heterogeneity in inflation expectations has implications for consumer spending, the transmission of monetary and fiscal policy, and voting behavior. There are two prevailing arguments on what drives heterogeneity across individual-level expectations surrounding macroeconomic outcomes. The first suggests that the differences stem from information individuals perceive on the state of the economy, while the second focuses on heterogeneity based on subjective models of the economy. Specifically, we collect evidence on the second argument through our pre-post information provision experiment. The experiment is conducted with a representative US sample using Prolific. We elicit participants' inflation expectations and randomly assign them to one of three treatment arms: an economic narrative, a political narrative, and no narrative (pure control). Our economic and political narratives are crafted on the basis that climate change impacts inflation through the supply side. Participants in each treatment arm are provided with an identical narrative. The survey prompts respondents to provide their inflation expectations and the propagation channels (e.g., demand or supply side) they use to explain climate change's effect on inflation after being exposed to the narratives. The propagation channels used in their forecasts provide evidence of selective memory. We implement a political narrative to identify the effect one's political affiliation has on inflation expectations. Our work situates in the growing economic literature studying inflation expectations using information provision experiments. We provide evidence on whether climate change impacts inflation expectations and the heterogeneity of subjective models of the macroeconomy. Our potential findings offer policymakers evidence on how to use narratives to anchor macroeconomic expectations and influence voting behavior.

Lee, Dylan

Institution: ***AL - Samford University***

Discipline: **Mathematics**

Author/Contributors:
Dylan Lee,
Zach Overton,
Kwadwo Antwi-Fordjour

Abstract Name: **Modeling Allee Effect in an Aggregated Eco-epidemiological Model**

A continuous predator-prey model subject to the Allee effect, prey aggregation, and infectious disease in the prey population will be presented during this talk. We assume that the prey population grows logistically in the absence of predator species. We split the total prey population into two distinct classes: infected prey and susceptible prey. Mathematical preliminaries such as positivity and boundedness are investigated. The analysis of the dynamical behaviors of the proposed model centers on the numerical simulations in which the Allee threshold and disease transmission rate of the prey are the primary parameters. The biologically feasible equilibrium points are analyzed. We will discuss our findings with emphasis on the potential applications in conservation biology.

Lee, Jacob

Institution: ***UT - Weber State University***

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Jacob Lee,
Raavi Raavi,
Chandler Ruping,
Tracy Covey,
Arturo Vegas

Abstract Name: **Development of Small Molecules which Inhibit the Activity of Interleukin-4**

Interleukin-4 is a pleiotropic cytokine. When dysregulated, interleukin-4 can be associated with asthma, allergies, and various forms of cancer. In asthma, IL-4 induces airway inflammation, obstruction, and hyper responsiveness, while in cancer IL-4 activity is linked to promoting tumor progression, immunosuppression, and increasing tumor resistance to apoptosis. Using small molecule microarray, 50,000 small molecule compounds were tested for binding to interleukin-4. A small molecule, Nico-52, is the first small molecule inhibitor found for interleukin-4. This compound shows binding affinity to IL-4 in the micromolar range. In this work, we tested homologs of this small molecule inhibitor for further enhancement of affinity and potency for IL-4 inhibition. By changing the structure and composition of one or more of the three rings of Nico-52 but keeping the nicotinonitrile scaffold, inhibition of the cytokine was tested. Multiple homologs of Nico-52 were successfully synthesized. Using high performance liquid chromatography, mass spectroscopy, and nuclear magnetic resonance, compounds were purified and confirmed. After these were synthesized, a cell-based assay was conducted to determine affinity and inhibition of the molecules. In this presentation, I will present the synthesized homologs and their respective activity for IL-4 affinity and my current work on structure based drug design to improve affinity.

Lee, Julia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Malee Yang,
Julia Lee

Abstract Name: **Hmong in France: History and Identity in an Age of Globalization**

This study examines the experiences of Hmong refugees resettled to France after the end of the Vietnam War in 1975. The data in this study is drawn from twenty-six in-depth interviews conducted with Hmong in France in cities such as Paris, Lyon, Nimes, and Toulouse. Hmong refugees continue to experience various challenges nearly fifty years after their migration to France. This study undertakes a sustained examination of various themes, including the transformations of Hmong identity and religion, experiences of racism, their community building efforts, their histories of labor, and their hopes and dreams, all within the French national context. Since the French Republican model formally erases racial, ethnic, religious, and cultural differences among its citizens, Hmong in France have had to devise creative strategies to maintain a distinct sense of self apart from dominant French nationalism. Yet, the French Republican ideology of official colorblindness continues to inhibit the development of a strong Hmong identity and their community building efforts. Furthermore, actual racism and discrimination on the ground have profoundly shaped Hmong's exclusion from education, housing, and employment. This study attempts to provide a humane and ethical portrait of Hmong French experiences in the age of globalization, when ethnic and cultural identities, religious practices, and minoritized experiences of living are all constantly being transformed. Together, the study shows that while Hmong continue to face extreme challenges to community building in ways that demand their assimilation into a colorblind French society, they have nonetheless successfully maintained a unique sense of self in a French society by dreaming and hoping for alternative futures.

Lee, Laura

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **FAN Abstract**

Author/Contributors:
Ryan O'Leary,
Lori Randall,
Laura Lee,
Sandra Neumann

Abstract Name: **Fostering Creative Inquiry on the Two-Year Campuses: A Discussion at the Confluence of Humanities, Sciences, and Academic Support**

As undergraduate research is a high-impact pedagogical practice, offering our students opportunities for meaningful and creative inquiry and guiding them as they undertake that inquiry is especiallyimportant on the two-year campus. Some of our students will graduate with an associate degree, meaning that this is the only chance they will have to do this work. Others will transition to four-year institutions, where they will need to be prepared for higher-level research when they arrive. At the same time, two-year colleges present unique challenges in supporting undergraduate research and embedding it into the curriculum. This panel will share some of the challenges faced by students, faculty, and staff in our two-year colleges from three perspectives—the sciences, the humanities, and academic support—then guide a discussion about strategies for meeting those challenges to enrich undergraduate research and creative inquiry. By bringing together these perspectives, we will examine undergraduate research on the two-year campuses at the confluence of the humanities, the sciences, and academic support with the goal of fostering creative inquiry and preparing our students to succeed in the next stage of their intellectual growth.

Lee, Nicholas

Institution: ***FL - Jacksonville University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Nicholas Lee

Abstract Name: Religiosity, Perceptions of Mental Health Services, and Well-being among U.S. Adults

Mental health treatment remains stigmatized within many religious communities (McGowan, 2012). Previous literature indicates that as religiousness increases openness to psychotherapy decreases (Mayers et al., 2007). Though previous research has examined the relationship between religiosity and perceptions of mental health services, little is known about how this relationship manifests in diverse groups and may be impacted by different mental health outcomes (Crosby, 2012). The present study investigates the following three research questions among a group of U.S. adults diverse in religious ideology and identity: (1) What is the relationship between level of religiosity and perceptions of mental health services; (2) What are the relationships among level of religiosity, perceptions of mental health services and well-being?; (3) Does level of well-being moderate the relationship between level of religiosity and perceptions of mental health services? Participants for this study are U.S. adults that identify as religious. Participants will be solicited via recruitment emails. Study data will be collected via an anonymous online survey consisting of the following instruments: A) Demographic Questionnaire; B) Attitudes Toward Seeking Professional Psychological Help Scale; C) Centrality of Religion Scale; and D) The Mental Health Continuum Short Form. To test the research questions, regression analyses will be used. A simple regression analysis will be used to test the relationship between level of religiosity and perceptions of mental health treatment. A multiple regression analysis will be used to test the relationships between level of religiosity, perceptions of mental health treatment, and overall well-being. A moderated regression analysis will be used to determine if level of well-being moderates the relationship between level of religiosity and perceptions of mental health treatment. Results of this study may inform future mental health interventions targeted towards religious individuals and those focused on reducing the stigma of mental health services.

Lee, Paterjah

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Music

Author/Contributors:
Chloe Carrillo *Paterjah Lee* *Jesse Hanson*
Havilah Vang

Abstract Name: Borodin String Quartet No. 2

Borodin's Second String Quartet in D Major is a piece that requires advanced ensemble techniques, fine intonation work, and balanced melodies. It is an essential quartet piece within the string repertoire, and one which our group has grown from immensely while preparing.
The passing of melodies from cello to first violin and viola to second violin requires eye contact, breathing, and togetherness as a group. Borodin includes immediate tempo changes marked at the two animatos, as well as poco a poco dim. e rit at the end of the piece.
Beginning in the deceptively easy key of D Major, intonation inaccuracies are not easily hidden in this piece. Several moments require the performers to play in unison or octaves, and every chord must be carefully tuned. Compounding this, the piece changes keys several times during its development. The F#s in these keys are naturally dissonant and difficult to tune, especially in a group setting. Our quartet has spent hours together refining our intonation.
Throughout the piece, the first violin and cello converse with each other by trading the main melody. Later in the development section, the melody is passed around to the rest of the quartet. At the recapitulation, the cello hands the melody to the viola, requiring a strong sense of balance among the group. Because of this, our quartet has been working on balancing the melody and the accompaniment. The passing melodies require each member to use the same bow techniques and distribution, keeping everything uniform and beautifully phrased.
An influential work for any group, Borodin's second string quartet blends beautiful melodies and textures with flawless technique to create a timeless masterpiece.

Lehto, Danielle

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Anna Claire,
Danielle Lehto,
Peter Zacher III,
Krysti Knoche Gupta

Abstract Name: **Electrochemical Characterization of Recast Nafion? Film Modified Electrodes in Nonaqueous Systems**

The behavior of recast Nafion® films on platinum working electrodes in nonaqueous solutions is characterized by cyclic voltammetry and rotating disk voltammetry. The behavior of recast Nafion® films in nonaqueous solutions has been observed to be different from the well-studied behavior in aqueous solutions. This work seeks to extensively study that behavior. The reversible redox couple tris(2,2′-bipyridine)ruthenium(II) hexafluorophosphate is studied in nonaqueous solvent acetonitrile with different electrolytes (tetrabutylammonium tetrafluoroborate, tetrabutylammonium trifluoromethanesulfonate, tetrabutylammonium hexafluorophosphate, and ammonium trifluoromethanesulfonate). The effects of the electrolytes will be compared against each other and controls (an unmodified platinum electrode and a recast Nafion® platinum electrode equilibrated in aqueous solutions of the redox couples). Electrolytes have been chosen for a variety of ion charges and ion sizes; in aqueous solutions, Nafion® is a cation exchange polymer and will exclude neutral and anionic redox molecules, however this does not necessarily occur in nonaqueous solutions. Additionally, there is some preliminary evidence that trifluoromethanesulfonate electrolyte may interact with the Nafion® sulfonate groups, so this will also be explored. Studies of each electrolyte variation will involve both transient cyclic voltammetry and rotating disk voltammetry; the relationship between scan rate and peak current will be explored for transient cyclic voltammograms and the relationship between rotation rate and limiting current will be explored for rotating disk voltammetry. The data from both techniques will be combined to identify the thickness of the in situ film and the diffusion coefficient for each variation.

Lehto, McKenzie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
McKenzie Lehto,
Jenna Heil

Abstract Name: **Law Enforcement and Mental Health**

Law enforcement is a stressful career that can lead to or exacerbate mental health issues in officers. The objective of this project was to identify and analyze stressors and mental health needs of local law enforcement officers in the Chippewa Valley. The study location helps us learn more about unique stressors and mental health needs of officers in small and medium-sized departments. To do so, we surveyed officers from six law enforcement agencies and conducted follow-up interviews with those who wanted to provide more insight. We found that the stress of shift work, strained personal relationships, and negative public perceptions were foremost on officers' minds. Additionally, officers reported that mental health resources were provided through their department in various ways including debriefing, peer support, and professional counseling. However, officers suggest that resources could be improved or expanded. This poster will highlight these findings, and more, in depth and discuss the implications of the results.

Leighty, Nicolas

Institution: *WI - University of Wisconsin-Madison*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Nicolas Leighty

Abstract Name: **Artificial Intelligence Enabled Heating, Ventilation, and Air Conditioning: Algorithm and Control Investigation**

Buildings account for a sizable portion of societal energy use, particularly in their heating, ventilation, and air conditioning (HVAC) systems. Incorporating artificial intelligence (AI) into commercial HVAC systems offers the potential for reducing this energy consumption while still being cost-effective in the long run. An individual investigation on AI and controls (algorithm and control investigation, “ACI”) for these HVAC systems was conducted within the context of a larger project known as the Wayne State University DTE E-Challenge on AI Powered HVAC Control, where a physical implementation is to be implemented. Within the ACI, Bayesian optimization (BO) and model-predictive control (MPC) were investigated, along with simulations primarily focusing on generic thermal modeling for context review of HVAC principles and dynamics. The ACI attempted to gather meaningful takeaways from its review, potentially to be applied in the DTE E-Challenge project, including principles, implementation-related recommendations, and algorithm abstractions to make implementation more practical and scalable. BO and MPC were both found to be effective in reducing energy consumption. Certain differences apply between the BO and MPC, and additional investigation is warranted to identify which may be better. AI can also improve overall occupant comfort. AI-enabled HVAC connects to sustainable manufacturing with the elements of sustainability, including environmental, social, and economic sustainability.

Lekane Tedjouteu, Valdel

Institution: *MD - Bowie State University*

Discipline: **Biology**

Author/Contributors:
Valdel Lekane Tedjouteu,
Anne Osano

Abstract Name: **Determination of Nutrient and Anti-nutrient factors in cassava leaves of selected varieties in Kenya.**

Food security has significantly increased due to climate change. With corn being the staple food in Kenya, cassava (Manihot esculenta,family (Euphorbiaceae)), have the potential to provide an additional source of nutrition. Cassava leaves are good sources of vitamins, protein, iron, and other micronutrients. However, it is an underutilized in Kenya due to highly poisonous constituents found in the leaves. The objective of this study was therefore to analyze the nutritional and anti-nutritional content of cassava leaves from five varieties (AdhiamboLera, Wild cassava 3, Wild cassava 1,KME-4, andselele) in Kenya. We hypothesize that there is no significant difference in protein and fiber content, Cyanide and Phytate content from vegetable leaves of the 5 varieties of cassava. Fresh vegetable grade, 7 months old cassava leaves were collected from Migori County, Kenya. Protein content was determined using the Latimermethod andfiber content usingAOAC method.Anti-nutritive factors: cyanide content was determined using the alkaline titration method and phytate content using Makkar, method. Results indicated that fresh leaf protein content was high in all 5 varieties of cassava.Fiber content varied among the varieties withAdhiamboLeraposting the highest content at 22%. All the varieties results showed a high Cyanide level above WHO tolerable level (10 mg/100g), withWild cassava 1having the highest level at 31 mg/100g. Phytates content was generally low except in Wildcassava 1, which registered a high level at 1500 mg/100g. Future studies will focus on proper processing, detoxification of cyanide for safer vegetables.This research waas conducted at Egerton University, Njoro, Kenya. Under the supervion of PI Dr Anne Osano of Bowie State University and Richard Mulwa of Egerton University with assistance from Milcah Wambua.

Leloup, Hannah

Institution: *CO - University of Northern Colorado*

Discipline: Chemistry/Materials Science

Author/Contributors:
Hannah Leloup,
Aaron Apawu

Abstract Name: **Optimizing HPLC-UV Method for the Measurement of Monoamine Neurotransmitters in the Hub of the Central Auditory System**

Hearing loss and tinnitus are conditions that affect multiple groups of people including construction workers, military personnel, dentists, and those who frequently listen to loud music through headphones or car stereos. These conditions can be caused by prolonged exposure to loud noise above 85 dB. As there is no objective measure for a condition like tinnitus, its diagnosis is based solely on self-reporting. Presently, the monoamine neurotransmitter, dopamine has been implicated in these noise-induced hearing disorders. However, not much is known about how excessive noise modulates the monoamine neurotransmitter systems centrally. This project utilizes tissue content analysis with high-performance liquid chromatography (HPLC) to examine potential changes in synthesis and metabolism of key monoamines in the central auditory system. Herein, we explored varied HPLC-UV/Vis methods. The methods include both isocratic and gradient elution with 0.05% Formic Acid and Acetonitrile at different ratios and flow rates between 0.5 – 1 mL/min. These methods were optimized, validated, and used to analyze dopamine, norepinephrine, epinephrine, and serotonin in the inferior colliculus of rats exposed to deafening noise (10 kHz, 118 dB SPL, 1/3 octave band noise for four hours) and compared with their controls. The data obtained suggest neuroadaptations that could underline noise-induced hearing loss/tinnitus.

Lemanczyk, Ryleigh

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Devyn Pfaff,
Brenna Moeller,
Ryleigh Lemanczyk,
Chrissy Headley,
Mary Endres

Abstract Name: **Racial-Ethnic Identity and Academic Success B**

There is immense discussion on what helps or hinders academic success. A person knowing who they are, no matter who, tends to know what they want and how to get it. This is not different in the academic setting. There are many different levels of understanding who we are within the culture from which we come. This study aims to connect several components of identity development with the resulting success in college. The aim is to see how the level of connection with one's racial-ethnic group, awareness of the perceptions by others and how one's racial-ethnic group is seen through the lens of academic achievement will impact the overall success in college. Other areas of interest in this study include college experience and how it impacts the motivation to attend classes and involvement in on campus activities connecting the student to the college leading to academic success. The final area that will be considered in this research is the level of college preparedness of the student and how the family or culture contributed to that preparedness. Correlational analysis will be completed through data collection in the spring semester of 2023.

LeMarquand, Cassie

Institution: *BRA - Oswaldo Cruz Foundation*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassie LeMarquand *Bianca Bono* *Nikita Koziel Ly*
Melissa Chee

Abstract Name: **Isolating beta-klotho receptors to define brain regions supporting alcohol intake**

Binge drinking is more prevalent in men than women. This sex difference is partly due to disinhibiting risk-taking and impulsive behavior. One hormone that may contribute to this behavior is fibroblast growth factor 21 (FGF21), which is secreted by the liver but acts in the brain to suppress alcohol consumption in mice. Interestingly, FGF21 actions are also known to be sexually dimorphic, so it is possible that FGF21 could mediate differential binge drinking behaviors observed in men and women. FGF21 requires a coreceptor, beta-klotho (Klb), to carry out its actions. Therefore, defining the precise spatial distribution of Klb mRNA in the brain will point to neural correlates that support FGF21 action on alcohol intake. We performed in situ hybridization to visualize Klb mRNA expression in the male and female mouse brain to account for possible sex differences. We focused our analyses on brain regions like the amygdala, hypothalamus, and subiculum that are involved in suppressing alcohol consumption. We generated brain maps of Klb mRNA cells, and we also identified whether they express low-, medium-, or high-levels of Klb mRNA. We found upwards of two-fold more Klb mRNA cells in the amygdala, hypothalamus, and subiculum of female brains. Specifically, the basolateral amygdala; the periventricular, arcuate and dorsomedial nuclei of the hypothalamus; and the ventral subiculum showed higher Klb mRNA expression in females, and these regions are implicated in alcohol intake. We are now pursuing in vivo studies in freely-behaving male and female mice to determine whether the activation or inhibition of Klb mRNA cells in the amygdala and/or subiculum would regulate alcohol intake in mice. As FGF21 action suppresses alcohol consumption, the elevated Klb mRNA expression in the female amygdala may inhibit impulsivity to curb binge drinking.

Lemke, Thor

Institution: *MN - Saint Cloud State University*

Discipline: Physics/Astronomy

Author/Contributors:
Thor Lemke *Brian Davis* *John Sinko*
Jordan Graupmann *Amr Abdo* *Braden Sahlstrom*
Devin Fleck

Abstract Name: **Titanium Orbital Debris Removal Via Laser Ablation**

Orbiting our planet is an ever-growing amount of debris. This orbital debris poses severe threats as the speeds at which debris travels means that even a speck of dust can do damage equivalent to that of a rifle bullet. This danger compounds with the potential triggering of Kessler Syndrome, which is an uncontrollable growth in the amount of debris. To remediate the possibilities of Kessler Syndrome, there must be found a way to remove or reduce the existing debris. Lasers and laser ablation may be able to do just that. For our experiment, we tested this potential on titanium, which is believed to be one of the significantly present metals within the orbital debris cloud.For our experiment, a 12 mm by 12 mm titanium target that had been polished to 1200 grit was placed in a vacuum chamber before facing a series of ablations from an Nd-YAG laser. The spherical vacuum chamber has a volume of0.05 m3and a pumped pressure of 10-2Pa. This is approximately the pressure at the Karman Line, or about 1000x the pressure at the typical altitudes of orbital debris. The Nd-YAG laser was operated at 1064 nm with a pulse duration of 90 μs and a pulse energy of 150 mJ. Each individual ablation focused on a previously unablated region of the target, based on a 20° rotation of the target. With each ablation, impulse, heat production, and UV-Vis spectra datum were collected. Additionally, a pre- and post-mass determined the overall mass removed after the series.The data on the titanium for impulse, heat production, UV-Vis spectra, and mass removal will be presented. Based already on these results, we were able to determine that yes, laser ablations would be a viable way to remove or reduce titanium debris from orbit.

Lemos, Abigail

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alyssa Harrington,
Lacee Allen,
Aurora Daigle,
Lauryn Deetz,
Abigail Lemos,
Brayden Wibel

Abstract Name: **Parental Involvement in Education B**

How relative is parental involvement in a child's education to the overall success of the child? Can parents be too involved in their child's education? In society today we are seeing an increased debate over the different types of parents and how good or bad they are to the overall growth and development of their children. Are helicopter parents harming their children's future? Are free range parents raising children with no rules or boundaries providing a need for society to deal with the evenual negative outcomes? The goal of this research is to study the different parental involvement levels in the education of their children and determine what positive and negative outcomes are present under each type of parental behavior. Some criteria that will be important in this study are the level of parental invovlement, to what age of the child does the involvement continue, academic performance and self-efficacy of the children. Other areas of interest in this study include whether gender and race/ethnicity are impacted differently under differing parenting styles. Correlational analysis will be completed through data collection in the spring semester of 2023.

Lensmire, Cali

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Samantha Krueger

Abstract Name: **Paleontology of Faunas from Initial Transgression to Deep Marine, Cretaceous (Albian) of Central Texas.**

The Early Cretaceous (Albian, 100-113 million years old) Walnut Formation crops out in the low valleys of the Lampasas Cut Plain in Central Texas. The Walnut records the transition from nonmarine into fully marine conditions with various lithologies of limestone, marls and shales, and is extremely fossiliferous, dominated by Bivalves, gastropods, Echinoids and Cephalopods. The succeeding stratigraphic Members of the formation contain distinct faunas: 1) the basal Bull Creek Member contains a low species richness, low evenness fauna dominated by the large gastropod, Peruviella dolium; 2) the Cedar Park Member contains an ichnofauna of arthropod burrows representing a tidal flat paleoenvironment; 3) the Keys Valley Marl Member contains both a high species richness fauna dominated by the ammonites Oxytropidoceras salasi and Engonoceras pierdenale and an oyster biostrome of Texigryphaea mucronata and 4; the Upper Marl Member is dominated by the bivalves Protocardia multistriata and Homomya bravoensis. Gastropods are abundant throughout all Members, and include several possible new species at the top of the formation. Overlying the Walnut, the wavy-bedded limestones of the Comanche Peak Formation contain a similar, open-marine fauna. Expected results will include multiple diversity indices and size-frequency histograms for dominant species at all fossiliferous horizons.

Lenthe, Jakob

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Taelyn Petersen,
Jakob Lenthe

Abstract Name: **Topical Bacteriophage Treatment Against Common Epidermal Infections**

Bacteriophages have shown promise in killing resistant organisms and in controlling infections to antibiotic resistant organisms. Both S. aureus, specifically MRSA, and S. pyogenes are common in epidermal infections and their respective bacteriophages have proven effective in resolving epidermal infections. While broad spectrum bacteriophages targeting these bacteria have been assessed in topical administration, little research has been published on bivalent phage therapies. The aim of this study is to assess the efficacy of a mixture of S. aureus and S. pyogenes bacteriophages in treating common skin infections that may be resistant to topical antibiotic creams. Laboratory strains of S. aureus and S. pyogenes will be used in an in vitro model of skin infection, using epithelial cell monolayers, and will be treated with a combination of their phages. Effective phage dosing against combinations and concentrations of organisms will be determined through calibration curves. Calculations from these calibration curves will provide information about the optimal doses of the bivalent phage treatment and used to assess the ability of the phages to clear infection in the in-vitro skin model. The epithelial monolayers will have different groups assigned to them, namely: controls for both bacteria and bacteriophages, individual bacteriophages in a mixture of MRSA and S. pyogenes, and finally a mixture of both genera of bacteria and both groups of bacteriophages. Following treatment, supernatant and cell layers will be tested using a standard IL-36 ELISA and confocal microscopy to assess overall pathology and success of the phage treatment compared to that of the control epithelial monolayers. If successful, the bivalent phage therapy will show reduction of bacterial growth and tissue damage. This would provide insight into how bivalent phage therapies treat wound infections and how it may reduce future reliance on antibiotics.

Lentine-Brown, Marley

Institution: *GA - Georgia College and State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lauren Ernst-Fortin,
Meredith Robertson,
Marley Lentine-Brown

Abstract Name: **A Pilot Study Exploring Veteran Identity Using Lyric Analysis in a Qualitative, Community-Based Participatory Action Research Framework**

Researchers attempt to define what it means to be a Veteran, but it is rare for that question to be directly asked of Veterans. Traditionally, experimenters define variables and ask the community of interest (CoI) to provide responses without the CoI being included in the research process or reaping any direct benefit from participation. There is a high degree of distrust and disenfranchisement reflected in Veterans towards the mental health care system and the scientific community. We aim to use the CbPAR model to amplify their voices and focus on what is important to them. We are seeking to allow Veterans to define their identity in their own words. Researchers serve as messengers to help amplify Veteran voices and disseminate their stories to the larger community. In the current study, we asked Veterans to identify songs that answered the question, “What does being a Veteran mean to you?” This study is part of a larger research project using both photovoice and lyric analysis to help define the “sights and sounds” of Veteran identity. Veterans worked individually with researchers through the process of lyric analysis, which is a music therapy intervention in which the client and therapist listen to a song together and discuss the connection the lyrics have to the client’s life experiences. Transcripts of interviews will be analyzed to uncover common themes and elements that help researchers understand how they conceptualize their community identity as Veterans. External validity is addressed through member checking, in which participants will review transcripts, discuss identified themes, and choose representative songs to present as a part of an immersive, interactive gallery experience for the community to allow for their stories to be told. We assert that more research should be done with the Veteran community, not to them.

Lentz, Abby

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Biology

Author/Contributors:
Natalie Meyer,
Nicholas Winter,
Abby Lentz

Abstract Name: **Bumblebee Distribution on UW-Parkside's Campus**

Purpose: Bumblebees are known pollinators and contributors to healthy ecosystems. In Wisconsin, UW-Parkside is a known location for the federally endangered Rusty-patched-bumblebee (Bombus affinis) and other bumblebee species. The objective of this project was to locate and identify various members of Bombus in four distinct campus phases (phase 1 and 2: completed restoration, phase 3: current restoration, phase 4: pre-restoration). Artificial nests were deployed into phases to encourage nesting and assess feasibility of monitoring resident bumblebee populations.Methods and Materials: Weekly, one-hour, surveys were conducted under appropriate conditions from 11 May to 5 October, 2022. Sites of ~15m radius within each phase were surveyed for Bombus activity. Information regarding location, weather, and topography were recorded. During surveys, specimens were tallied and photographed for later identification. In each phase, six randomly placed artificial nests were either wood-covered or unsheltered to resemble natural nesting conditions. Early in the season nests were regularly inspected for activity.Results: During 50 surveys, 199 bumblebees were recorded on the UW-Parkside campus; no Rusty patched bumblebees were observed during the first year of this project. Bumblebees appeared to prefer phases based on habitat composition rather than levels of restoration. In spring, it appeared queens frequented wooded areas, presumably for nesting purposes. Artificial nests were unoccupied this season perhaps due to delayed placement and challenges from vegetation encroachment. This pilot project provides guidelines for future artificial nesting placement and construction. Overall, our first season of survey data provides needed information on the current state of bumblebee activity on campus which serves as a guide for further restoration.

Leon, Isabella

Institution: *IN - Indiana State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Justin Vangilder *Caleb Bowles* *Jeffery Buell*
Christian Herron *Isabella Leon* *Mackenzie Michael*
Lillian Moehring *Sophia Rashid* *Carter Ritzheimer*
Sandra Xique *Jennifer Latimer*

Abstract Name: **Investigating the use of crayfish as environmental water quality sentinels for metal pollution in Indiana creeks**

Ephemeral creeks and streams can be difficult to monitor and assess for water quality. Unfortunately, these same water systems can play a significant role in the input of metals and other pollutants into major waterways. Metals are often the result of nonpoint source or historic point source pollution that is no longer active, making assessment and exposure prevention difficult. An economical and reliable approach to determine water quality in these areas would be the use of reliable sentinel species that are endemic, easily identified, and respond in a quantifiably way to metals in the environment. Macroinvertebrate assemblages have been historically used to create comprehensive biotic indexes, but these indices can be complicated, seasonal, and difficult to assess without identification bias. For this project, crayfish samples, water samples, and sediment samples were collected in several creeks in Indiana representing a variety of environmental exposures. We hypothesized that because are omnivores and biotic engineers, their environmental interactions place them in a unique niche making them a reliable sentinel species. By testing and comparing the bioaccumulation of metals in crayfish tissue, water, and sediments to dominant species, average crayfish size, and population density, we can reliably predict creek health for metals. Our results determined thatFaxonius rusticus(rusty crayfish) were found in creeks with higher environmental metals. Also, crayfish cephalothorax measurements were smaller in higher metal environments. This data, along with metal bioaccumulation and biomagnification make crayfish an excellent sentinel for water quality in creeks.

Leonard, Aaliyah

Institution: ***FL - The University of Tampa***

Discipline: Theatre and Dance

Author/Contributors:
Aaliyah Leonard

Abstract Name: Catharsis in Choreography

The following research examines the cathartic experiences of dancers by intentionally incorporating psychological principles into the choreographic process. These ideas were used to shape the dancers' perception of the movement and message of the dance work. Throughout this process "Flow state" and "mindfulness", were used as choreographic devices, in which two groups of dancers learning the same dance work based on Elizabeth Kebbler-Ross' five stages of grief, explored how the varied prompts influenced their feeling of connectedness to the piece. The basis of the movement stemmed from the physiological responses of the body in each stage of grief, and were adapted based on the psychological principles being used in coaching. Using surveys completed by the participants and coded to specification, correlation was then drawn about how the choreographic process influences the experience of the dancers, and how coaching choreography has a direct effect on the connection the dancers make with the message. Overall the dancers coached into a "flow state" reported a stronger bond with the dance, while the dancers coached in "mindfulness" reported that the process helped them grow as performers as opposed to those coached into a flow state. This project served as a representation of how dance and psychology are intrinsically linked and how understanding that relationship can be useful in fostering a cathartic experience, and increased connection between dancers and their movement.

Lepiz, Nallely

Institution: ***GA - University of Georgia***

Discipline: Economics

Author/Contributors:
Nallely Lepiz,
Tine Lee

Abstract Name: Grass Fed Beef Benefits and Water Eutrophication

Eutrophication of water bodies, resulting from high levels of nitrogen and phosphorus from various non-point sources, can be addressed through best management practices that aim to promote better soil health and keep soils and nutrients from running off the land. One excellent way to prevent run-off is to promote perennial grasslands. In order to understand more about the potential to encourage more farms to convert to grazing, I investigated the costs and benefits of grazed beef in comparison to the predominant corn silage feeding of cattle in Wisconsin, an area with many eutrophic lakes. Through independently reviewing publicly available information and policies, I synthesized financial and environmental data on the grass-fed beef industry in comparison to corn for silage in order to evaluate which of the two would be the most financially and environmentally beneficial option for small-scale farmers to pursue. I found an abundance of environmental and financial benefits that grass-fed beef farming has to offer to its practitioners and ecosystems. Grass-fed beef farming offers the most cost-effective system for farmers to reduce their labor time, production expenses, and greenhouse gas emissions. This is vital information for regional Wisconsin farmers and surrounding communities to know in order to make better-informed production decisions that can positively influence the health and stability of their own and their land's future.

Lepke, Dominick

Institution: *MD - Salisbury University*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
Dominick Lepke

Abstract Name: **Tactics to Prevent the Use of Blockchain Technology as a Facilitator for Laundering Money**

The nature of decentralized currencies has led to its use as a medium for laundering money by illicit businesses, perpetuating the detrimental effects of organized crime and terrorism. This not only endangers the safety of the general population but also disrupts the global economy. Scholars agree that there is an urgent need for the United States government to establish regulations that would apply anti-money laundering legislation to cryptocurrency. Scholars also agree that the nature of decentralized cryptocurrency makes it difficult to implement any preventive measures that would inhibit money laundering. This paper argues that the most viable method of regulating decentralized currency is through the framework proposed by the Financial Crimes Enforcement Network (FinCEN). This would include revising the Bank Secrecy Act (BSA) and implementing the FinCEN framework, allowing the federal government to enforce regulations over cryptocurrency exchange platforms and conduct direct investigations of transactions that occur over exchanges. To establish these regulations, it is crucial that state governments unify in order to enact legislation that would provide federal agencies with sufficient authority to develop and enforce the proposed framework. These actions would deter criminal organizations from conducting laundering operations through cryptocurrencies to preserve the United States financial system and promote other nations to enact similar anti-money laundering (AML) legislation. The finances of crime and terrorist organizations are one of the most vulnerable components of their organization and for that reason, restricting the capital of these illicit organizations is one of the most feasible methods of combating crime and terrorism both domestically and internationally.

Lerwick, Linnea

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Linnea Lerwick,
Abby Kuna

Abstract Name: **Effects of Stereotype Threat on Executive Function**

Activating age-related stereotypes, known as stereotype threat, can lead to a decrease in executive functioning in older adults (Hess et al., 2003). However, there is limited research on the effects of aging stereotypes on middle aged adults. We examine the effects of stereotype threat on executive function across three age groups: young, middle-aged, and older adults. All participants are randomly assigned to either a stereotype threat condition or a control condition. We plan to investigate the role of stereotype threat on an executive function task using the “Age Identification Scale” (Garstka et al., 1997) and the “Attitudes Towards Own Aging” questionnaire (Lawton, 1975) to establish stereotype threat and using the Digit Span Task (Blackburn; Benton, 1957) and the Wisconsin Card Sorting Task (Heaton et al., 1993) to assess executive function. We have completed our data collection and are starting our data analysis. We hypothesize that (1) middle-aged and older adults will have lower performance under the stereotype threat condition compared to their counterparts in the non-stereotype threat condition and (2) middle-aged and older adults will have lower performance on the cognitive tasks than younger adults in both conditions. We will use a two-way independent factors ANOVA to examine the relationship between stereotype threat and performance, age and performance, and the interaction between age and stereotype threat. Findings from this research expands the literature surrounding stereotype threat and executive function in middle age, which has not been extensively studied. Further, we will examine the influence of people’s beliefs about their age and the impact of those beliefs on cognitive tasks that assess executive function. Findings from this research will have implications for how we understand executive function in the aging population.

Lesch, Matt

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Elias Webb *Sam Denzine* *Jose Corona Acosta*
Matt Lesch *Garth Davis* *Lisa Burns*
Kate Czekalski *Colton Gores*

Abstract Name: Flexible Finger Design for Robotic Gripper

In industry, the safety and productivity of collaborative robots make them a vital part of many pick and place applications in production. Collaborative robots offer many advantages including their flexibility. In keeping with the advantages of collaborative robots, this flexibility should be extended to the grippers and fingers to reflect human-like dexterity. Flexible fingers have several advantages over traditional, rigid grippers. Adaptive fingers can pick and place a much broader array of oddly shaped objects than traditional grippers. Flexible fingers are also advantageous when working with fragile objects, such as produce, as the gripping force can be distributed by the flexing of the finger.The purpose of this project was to design, optimize, build and evaluate flexible fingers which can be mounted to a Schunk gripper on the end of a Fanuc collaborative robotic arm. Flexible fingers were designed in SolidWorks to integrate with the robotic gripper assembly. By testing prototypes, aspects were identified to improve the flexibility and functionality of the gripper. Using DOE (Design of Experiment) as an optimization strategy, the effects of each variable such as material, wall thickness, infill, etc. was studied. Mechanical simulators were used to isolate and test these variables to see their effects on the system with realistic situational constraints.The manufacturing of the flexible fingers consisted of using SLA and FDM printing to test, compare, and combine the more promising features into a robust finished product, capable of gripping and lifting various objects.Using technologies such as CAD, additive manufacturing, and agile engineering methodologies; it was possible to accomplish the design process and optimize the finger design in a collaborative manner.

Leuck, Adrienne

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Joe Berg,
Adrienne Leuck,
Kaitlin Peterson,
Kimberly Sanchez,
Madeline Wood,
Michael Ziegler

Abstract Name: Smartphone Use on Well Being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphone use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitive, and social well-being of individuals across the generations. Previous research tendedto focus on one aspect or another of well-being, for example sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are impacted by Smartphone use.

Leutner, Payton

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Psychology/Neuroscience

Author/Contributors:
Payton Leutner,
Jeremy Jin

Abstract Name: Gender Differences in the Accuracy of Self-evaluations of Performance on Math and English Tests

Despite years of progress towards gender equity in society, stereotypes and discrimination against women persist (Moss-Racusin et al., 2019). Sexism may lead to serious consequences such as succumbing to stereotype threat, especially in occupations, social interactions, and academia. A common stereotype is that men are better than women in stereotypically masculine fields such as STEM, which have led men to develop a false sense of superiority in the field of mathematics and other STEM-related fields such as computer science (Beyer, 2002; 2019). Previous research by Beyer (2002) found that men tend to overestimate their abilities in mathematics, but that there are no gender differences in self-perceptions in stereotypically feminine fields such as English. She found that women struggle with self-doubt in mathematics but not in English (Beyer, 2002). 20 years after this study, it was our intention to revisit this study to explore whether gender differences in self-perceptions still exist in higher education. Using survey-based research with questions mimicking standardized testing, participants' expectations and self-evaluations of performance in English and math were measured before and after completing each test. Like the research done in the early 2000s, we hypothesize that men will overestimate their mathematical abilities but that there will be no significant gender differences in expectations and self-evaluations for English. This study will reveal whether expectations and self-evaluations are still affected by stereotypes about women's and men's abilities. We are still collecting data from our university-level participants this fall semester; however, data collection will be completed by December and we will be conducting statistical analyses using ANOVAs in January of 2023.

Lewis, Abigail

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Abigail Lewis *Vasavi Chandramouli* *Kelly McNamer,*
Rebecca Jarzynski

Abstract Name: An Analysis of the Representation of Gender within Children's Books at a University CSD Clinic

Speech-language pathologists are increasingly called to provide culturally and linguistically responsive services (ASHA, n.d.). As a part of meeting this call, SLPs are tasked with using culturally responsive materials, including the use of books that are representative of a wide variety of identities across race, ethnicity, gender, religion and ability (Harris; Owen Van Horn, 2020). Research investigating gender representation within children's books has overwhelmingly found the presence of underrepresentation of women along with pervasive gender stereotypes. The purpose of this research is to analyze the quality of gender representation within children's literature at a university clinic. The research question the study aimed to answer was, "what roles do female and male characters assume in books found within the children's literature at a Midwestern University SLP Clinic, and how do these roles relate to traditional gender stereotypes?"To complete this research project, an annotated bibliography was completed to gain adequate background knowledge. Next, a checklist for analyzing gender representation was formed to code books and pilot data was collected. A random sample of 262 books within the library have been analyzed. It was found that the presence of male main characters was higher than female main characters within narrative and expository books. Another finding was that nonhuman characters are more common in children's books and have male overrepresentation at a much greater rate than books with human characters. As a next step in this study, the authors of this study will further review the 262 books that have been analyzed thus far and conduct a qualitative analysis of the stereotypes and gender roles. Findings will inform practices for evaluating clinical materials to ensure quality representation of gender within materials used for assessment and intervention services.

Lewis, Dylan

Institution: *FL - Florida Atlantic University*

Discipline: Economics

Author/Contributors:
Dylan Lewis

Abstract Name: **Subscription Models Taking on the World**

For a little over a decade the rise of subscriptions-based models has seemed inevitable. This has become even more so with the Covid-19 pandemic. When faced with uncertain territory of fighting a global pandemic, the world locked down to help curb covid-19 transmissions. This lockdown led many to evaluate the way they were using their discretionary income when it came down to day to day purchases. This prompted both businesses and customers to attempt to squeeze more value, in part by offering subscription-based payments instead of one-time purchases in uncertain times. The purpose of my study is to see the people's preferences between subscription-based models and one-time purchases. To do so, I conducted a 12-question survey and collected data using Amazon M Turk, which compiled over 195 responses. The results show that there is a statistically significant difference between age and the usage of subscription-based models. In addition, I found there is a difference between gender and subscription-based models. These results are important because they highlight the strict breakdown of who has been most effected by the switch in spending patterns.

Leyva Zaldivar, Daniela

Institution: *TX - Texas Woman's University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Daniela Leyva Zaldivar *Daisy Cantu* *Sonia Adhikari* *Dayna Averitt*

Abstract Name: **Sex Differences in the Neuroplasticity of Trigeminal Ganglion Neurons Projecting to the Rat Vibrissal Pad During a Stress-Exacerbated Orofacial Pain State**

Psychological stress contributes to orofacial pain, which is 3-4x more prevalent in women. Our previous studies indicate that stress exacerbates orofacial pain to a greater degree in female rats. Some of the mechanisms associated with stress and orofacial pain include changes in the plasticity of the trigeminal ganglion (TG) cells and glial cell density. The phosphorylated extracellular regulated kinase (pERK; plasticity marker) is present in the TGs of male animals exposed to masseter muscle inflammation. Further, Glial Fibrillary Acid Protein (GFAP; glial cell marker) increases in TGs in males after inflammatory pain. However, the mechanisms underlying stress-exacerbated orofacial pain are not very well understood in female rodents. Here we hypothesized that exposure to orofacial pain and stress increases neuroplasticity and glial density in TGs of female rats. Male and female Sprague-Dawley rats received one injection of complete Freund's adjuvant (CFA) into the right vibrissal pad (RVP). Animals were subjected to three consecutive days of either forced swim test (FST; sub-chronic stress model) or sham conditions. Eight days post-FST, all rats received an injection of the trans-synaptic tracer wheat germ agglutinin conjugated to the Alexa Fluor 488 (WGA-488; Fisher-Scientific) into the RVP. Eleven days post-FST, all animals were perfused. The TG was extracted and processed for immunohistochemistry using antibodies against GFAP protein (rabbit anti-GFAP; Abcam) and pERK (rabbit anti-pERK; Cell Signaling). The pERK+ cells were similar across sexes during stress-exacerbated orofacial pain. However, WGA-488 colocalization with pERK was greater in males, indicating increased neuroplasticity in males. While glial density did not change across sexes, GFAP and pERK were colocalized, indicating that glia are implicated during stress-exacerbated orofacial pain. Overall, our data indicates that TG-VP projections undergo neuroplasticity, are sexually dimorphic, and may play a protective or antinociceptive role in reducing the amplifying effects of stress on orofacial pain in males.

Li, Hongdi

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Hongdi Li *Elizabeth Her* *Emma Flemke*
Lydia Kneubuehl *Pranabendu Mitra*

Abstract Name: Effect of shortenings on the physicochemical, textural and sensory properties of gluten free cupcakes

The objective of the study was to determine the effect of shortenings (butter, margarine, and vegetable shortening) for optimizing the cupcake formulations on the physicochemical, textural, and sensory properties of gluten-free cupcakes. The demand for gluten-free baked products is increasing gradually because a large number of populations are affected by gluten intolerance. Also, the right butter replaces and different gluten-free flour ingredients in cupcakes open a healthier cupcake option for the consumers. In this study, three cupcake doughs with oat milk and gluten-free flour were prepared using three dairy-free shortenings (butter, margarine, and vegetable shortening). The cupcake doughs were baked at 350°F for 20 min to develop the gluten-free cupcakes. The physicochemical, textural, and sensory properties of the cupcakes were determined. The statistical analysis ANOVA indicated that those three shortenings affected the physicochemical and textural properties significantly (0.05). However, the sensory panelists were not able to determine the difference among the cupcake samples (p>0.05). The sensory analysis for the overall acceptability results indicated that the vegetable shortening cupcake was the most preferred cupcake formulation having a score of 6.39 and the butter cupcake formulation was the least preferred one having a score of 6.11. The variation of water activity (0.72-0.76), L-value (57.28-65.09), and total color difference (34.12-78.61) wasfound among the cupcake samples. Relatively moderate textural properties such as hardness (15.70 N), cohesiveness (2.00), springiness (0.16), gumminess (26.14), and chewiness (26.57) were achieved by the vegetable shortening cupcakes. The findings of this study will be beneficial for the commercial development of gluten-free cupcakes with healthier ingredients.

Li, Liang

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Jialin Xu *Liang Li* *Cavan Callahan*
Elizabeth Glogowski

Abstract Name: Viscosity and Viscoelastic Behavior of Stimuli-responsive Copolymers for Use as Dispersants in Architectural Coatings

Viscosity and viscoelastic properties are important for the application of stimuli-responsive polymers as dispersants in architectural coatings such as paints. Viscosity is a fluid's resistance to flow under stress, while viscoelastic materials exhibit solid-like elastic or liquid-like viscous behavior depending on experimental conditions. New stimuli-responsive polymers, which change their properties in response to changes in temperature, pH, and mechanical environments, could affect the dispersion of opacifying particles such as titanium dioxide in the coating. By adding stimuli-responsive polymers, the properties of architectural coatings can be controlled to produce a more opaque coating with controlled viscosity. This decreases costs and reduces environmental impact. A rheometer is used to test a polymer's viscoelastic properties under different pH, temperature, shear rate, and frequency conditions. Understanding how viscoelastic properties change in response to external conditions is necessary for matching these polymer properties to properties needed for architectural coatings. Viscosity testing is used to determine how well the polymer will mix with titanium dioxide particles. Ideally the coating will have the lowest polymer concentration and lowest viscosity possible to meet performance needs. Viscosity tests help determine where this minimum occurs for different copolymers. This can help determine which polymer is most suitable for dispersing titanium dioxide particles. Viscosity and viscoelastic testing can allow for determination of how changes in polymer structure result in changes in stimuli-responsive properties. The copolymer structures can be tuned, and the properties can be predicted in order to optimize properties for architectural coatings. This results in new materials to meet performance requirements to compete with traditional, commercially available dispersants.

Li, Yaocheng

Institution: ***OH - Capital University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Andrea Karkowski,
Yaocheng Li

Abstract Name: **Student Perceptions of Mask Wearing in Classes**

For the last two years, mask-wearing has been commonly required by colleges and universities. Mask wearing has the potential to influence the ways faculty teach and how students learn in the classroom. The purpose of this study was to examine students' perceptions of how mask wearing affects them in the classroom. This research also examined whether cognitive and personality variables are related to students' responses to mask wearing. Students completed a survey containing the Adaptability Scale, the Student Learning Experiences Scale, and two other scales to measure students' reaction to Face-to-face learning versus remote learning. In addition, I examined de-identified grade data comparing student grades prior to the COVID pandemic, during the first year of the pandemic, and during the second year of the pandemic. I hypothesized that students would report a decreased learning experience due to mask wearing. I also expected that grades during the first year of the pandemic would be lower than prior to the pandemic and in the second year of the pandemic. Understanding student response to mask wearing in learning environments can inform methods to limit negative effects that mask wearing might have on learning.

Liang, Andrew

Institution: ***WI - University of Wisconsin-Madison***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Andrew Liang *Steven Wiesner* *Xin Huang*

Abstract Name: **Testing a Theory of Population Neural Coding in the Visual Cortex Using Motion Adaptation**

Direction repulsion refers to the illusory visual perception that the angular separation (AS) between the motion directions of two overlapping random-dot stimuli is wider than they actually are. The human visual system's ability to adapt to the sensory environment, specifically through motion adaptation, or adaptation to a moving stimulus, can have a profound effect on visual perception. Adaptation has served as a powerful tool to investigate the neural mechanisms underlying visual perception. However, the impact of motion adaptation on the illusion of direction repulsion is unknown. To address this question, we performed a psychophysics experiment using a two-alternative forced choice task and a staircase procedure to measure the perceived AS between two motion directions, with and without motion adaptation. Visual stimuli were overlapping random-dot patches moving in two different directions separated by 30°, 45°, 60°, and 90°. Two human subjects fixed their eyes at the center of the visual stimuli and compared the AS of the random-dot stimulus with the angle of two stationary lines to determine which stimulus had a wider angle. The adaptation stimulus was a random dot patch moving in the vector-averaged (VA) direction of the bi-directional stimulus for 3 seconds immediately before the motion of the bi-directional stimulus. In comparison to no adaptation, motion adaptation significantly increased the ratio of the overestimated AS versus AS, i.e. (perceived AS – AS)/AS, from 0.31, 0.19, and 0.11 to 0.39, 0.24, and 0.15, respectively, for AS of 30°, 45°, and 60° ($p \leq 0.01$), but had little effect on 90° AS, where direction repulsion was minimal without adaptation. Our study showed that adaptation to the VA direction of a bi-direction stimulus significantly enhanced the illusion of direction repulsion. These findings have important implications for how the brain represents multiple visual stimuli in the activity of neuronal populations.

Lietzke, Clara

Institution: *ND - University of North Dakota*

Discipline: Chemistry/Materials Science

Author/Contributors:
Clara Lietzke,
Jakub Hraníček

Abstract Name: **Determination of arsenic at (ultra-) trace levels using spectrometric methods**

Arsenic (As) and other heavy metals are present at trace levels in the environment but are still highly toxic. Increased industrial activity has led to their pollution in water and soil, where they are highly soluble and able to form complexes with biological molecules. Arsenic in particular is a by-product of power plant emissions and mining waste and has been shown to accumulate in plants from soil contamination. Flame-atomic absorption spectroscopy (F-AAS) and inductively coupled plasma-mass spectrometry (ICP-MS) were used for the determination of As and other metals in this study. Methods for both spectrometric techniques were designed and optimized, and ICP-MS was used to quantify As in different biological samples. Tree leaf samples collected around the Czech Republic, as well as animal tissue samples, were prepared by microwave digestion. The leaf samples collected in Praha (Kobylisy), Praha (Petřín), and Desná (Riedlova hrobka) were found to have the greatest concentrations of As. As, nickel (Ni), cadmium (Cd), and lead (Pb) content was also determined in several pharmacy-grade and grocery store tea samples. Both tea infusions and tea leaves decomposed by microwave digestion were analyzed. Additionally, the dependence on time and temperature of the tea infusion was studied. Tea infusion samples prepared with higher temperatures of water were found to have greater As levels.

Liew, Celine

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Esam Alfalah *Celine Liew*

Abstract Name: **Can firefighters wipe away dermal toxins? Evaluating removal efficiency from synthetic skin**

In June of 2022, the International Agency for Research on Cancer (IARC) finalized their evaluation that occupational exposure of firefighters should be classified as “carcinogenic to humans”. Many articles have identified health risks of various substances that firefighters are exposed to via inhalation, ingestion, and dermal exposure. In response to this, companies have introduced several products to reduce toxic chemical exposure for firefighters. In our research, we evaluated a commercial product, microdot® AfterFire™ Wipes, intended for use by firefighters to remove chemicals from their skin after exposure during firefighting operations. We evaluated several target compounds of interest, including benzo[a]pyrene (B[a]P), tris(2-carboxyethyl)phosphine (TCEP), perfluorooctanoic acid (PFOA), lead(II)oxide, and soot. They represent several common categories of chemicals that firefighters encounter, including polycyclic aromatic hydrocarbons (PAH) resulting from incomplete combustion, phosphate ester fire retardants, per- and polyfluoroalkyl substances (PFAS) found in firefighting foam, and hazardous building materials, respectively. Experiments were conducted on a synthetic skin surrogate (VITRO-SKIN®) that has topography, pH, critical surface tension, chemical reactivity and ionic strength similar to human skin. Known amounts of target compounds were deposited on controls and samples, which were wiped with the AfterFireproduct. The quantity of target compounds remaining on the VITRO-SKINwere analyzed usingmethods such as solvent extraction and gas chromatography-mass spectrometry (GC-MS) for B[a]P, PFOA, and TCEP, ignition, acid digestion and microwave plasma-atomic emission spectroscopy (MP-AES) for lead(II)oxide, and suspension and optical extinction by UV-Vis spectrophotometry for soot. Preliminary results suggest that the percent removal of these chemicals each approximates 50% with a 95% confidence interval. This study is supported by Cambridge Sensors, USA, developer and producer of AfterFireWipes.

Liew, Elizabeth

Institution: *MN - Hamline University*

Discipline: Sociology

Author/Contributors:
Elizabeth Liew,
Ryan LeCount

Abstract Name: **Education By Omission: Racial Threat and White Support for Public School Curriculum Restrictions**

Recently, the United States has seen a significant uptake in state laws seeking to ban so-called "critical race theory" (CRT) from public school curricula. U.S. Census data predict that by approximately 2042, racial and ethnic minorities will make up the majority of the U.S. population. Using the framework of "group threat theory," (Blumer 2016) this project explores how exposure to the threat of changing racial demographics in the United States affects the likelihood of support for banning CRT in school curricula. Based on the work of Craig et al. (2018) we conducted a survey experiment to prime White respondents with racial threat. While our initial analyses did not indicate a primary effect of our experimental threat treatment, findings suggest that, net of socio-demographic controls, White respondents higher in racial resentment were more likely to oppose the teaching of CRT. Respondents high in racial resentment were also more likely to support a CRT ban. Further, our analyses indicated that those who live in counties in which the white population has declined are more likely to support a CRT ban than those in which the white population has increased the most, although this effect was just below the threshold for statistical significance. Past works illustrate how group threat theory and changing racial demographics influence political beliefs, but none have yet to explore it in the context of schooling. This study provides further evidence of the racialization of attitudes about school curriculum policy.

Light, Milo

Institution: *UT - University of Utah*

Discipline: Biochemistry/Molecular Biology

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Milo Light *Sohom Mookherjee* *Lori Begaye,*
Amandine Chaix *Frederik Denorme* *Robert Campbell*
Megan Tandar *John Symons*

Abstract Name: **Inducible depletion of Atg3 specifically in endothelial cells worsens outcomes of acute ischemic stroke.**

Treatments for acute ischemic stroke (AIS) include thrombolysis (clot dissolution) and thrombectomy (clot removal). Most patients are ineligible for these procedures because they must be initiated within 4.5h (thrombolysis) or 24h (thrombectomy) of AIS onset. New targets for intervention are needed. Here we evaluate the contribution from endothelial cell (EC) autophagy to outcomes of AIS. AIS creates nutrient stress and activates EC autophagy. Heightened EC autophagy in response to AIS helps to : (i) identify, and shuttle damaged proteins to the lysosome for degradation and recycling; (ii) generate ATP from recycled macromolecules; and (iii) preserve arterial function by enabling EC nitric oxide production. First, we hypothesized that depleting EC autophagy worsens outcomes of AIS. Adult mice with intact autophagy (ATG3 WT) or depletion of autophagy-regulated gene 3 (Atg3) in ECs (ATG3 EC-/-) were challenged with an induced stroke, followed by 23 h reperfusion. By design, AIS increased (0.05) EC autophagy in brains from ATG3 WT but not ATG3 EC-/- mice. Infarct volume was larger, and neurobehavioral/physical deficits were worsened (all 0.05), in ATG3 EC-/- vs. ATG3 WT mice (n=7 per group). Second, we hypothesized that amplifying autophagy improves outcomes of AIS. For 3-weeks adult mice consumed standard chow that was (rapa) or was not (control) supplemented with the mammalian target of rapamycin complex 1 (mTORC1) inhibitor rapamycin, a potent activator of autophagy. As evidence of mTORC1 inhibition, fasting-induced p-s6K : s6 was greater (0.05) in liver segments from rapa vs. control mice (n=4 per group). AIS–induced outcomes concerning infarct volume, and neurobehavioral/physical performance, were superior in rapa vs. control mice (n=8 per group). These results indicate EC autophagy depletion worsens, whereas EC autophagy activation mitigates, outcomes of AIS. Our ongoing studies are targeting EC metabolism to improve outcomes of AIS.

Lim, Hyoeun

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Hyoeun Lim,
Wenxia Ma,
Angad Yadav,
Anna Thalacker-Mercer

Abstract Name: **The Effect of Dietary Amino Acids Glycine and Serine on Body Composition**

Advancing age is associated with deterioration of the skeletal muscle (SkM)—a commonly reported aging phenotype. Although SkM deterioration is multifactorial, it has been linked to heightened inflammation, mitochondrial dysfunction, and dysregulated proteostasis. A notable previous research utilized aSkM regenerative model todemonstrateGly/Ser as essential nutrients for maintaining and regaining SkM homeostasis andhow levels of the nutritionally non-essential amino acids glycine (Gly) and serine (Ser) decline with advancing age. The therapeutic potential of Gly/Ser for age-related SkM deterioration will be explored by measuring the effect of dietary Gly/Ser on body composition as well as markers of inflammation, mitochondrial function, and proteostatsis. In this experiment, both old (20-22 months) and young mice (4-6 months) were randomized to a control, supplemented, and deficient diet (isonitrogenous, isoenergetic). After 28 days of the diet, the weight of the mice was measured, the tibialis anterior (TA) muscle and liver samples were taken, and RNA was isolated, quantified, and quality checked. GDF15, which is thought to be involved in protein catabolism and inflammation, is being measured along with inflammatory cytokines (IL-6, Tweak). After 28 days of the diet, mice on the supplemented diet had a greater body masswhile mice on the depleted diet had the least body weight, but whether differences in body mass were due to changes in lean and fat masses is yet to be determined. Gly and Ser are a likely therapy for improving age-related SkM deterioration. Experiments are ongoing to elucidate the effects Gly/Ser for SkM health.

Lim, Zoey

Institution: *WV - West Virginia University*

Discipline: **Music**

Author/Contributors:
Zoey Lim

Abstract Name: **Creating Music That "Causes a Scene"**

Everyone has heard the expression "a picture is worth a thousand words," and perhaps "music is worth a thousand pictures," but what exactly does it entail to create music that describes motion pictures such as film and television? As a fan of film and television music, I've spent a lot of time listening to scores, noting how certain moments are highlighted, and pondering how composers make audiences feel the scenes they're watching. Eventually, I was given the opportunity to score music for a short animated film, which was then performed by the WVU Film Scoring Ensemble in 2021. The film's title "Jinxy Jenkins and Lucky Lou" was inspired by the two main characters, Jinxy Jenkins, who was a gloomy, human-shaped bad luck magnet, and Lucky Lou, who was a sunshine-and-rainbows type who was as lucky as her name suggests. The idea was simple: "to try to tell the story of two contrasting characters," but actually creating the music was no easy task for an aspiring composer like myself. A tight deadline, fixed instrumentations, traditional orchestration, and additional music considerations such as choosing hit points, style, and thematic material, as well as all the technical aspects of syncing music to picture, made the project an exciting challenge. For the purposes of this conference, I will examine the function that my original music serves in the animation from both the composer's and the listener's perspectives, and I will attempt to analyze how that function is carried out. The presentation of this work will either be through a video recording or a live performance. <u>Jinxy Jenkins; Lucky Lou</u> Duration: ca 2:00 Instrumentation: Flute, Bb Clarinet, Alto Saxophone, 2 Horns in F, Bass Trombone, Tuba, Violin, 2 pianos, synthesizer, glockenspiel, snare drum, bass drum.

Limb, Emily

Institution: *UT - Utah Valley University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Anna Wilkinson Barkdull *Emily Limb*

Abstract Name: Visualizing Utah Lake Nutrient Concentration using GIS-Remote Sensing Analyses

Utah Lake, one of the largest freshwater lakes west of the Mississippi River, has been experiencing harmful algal blooms (HABs) in recent years. These blooms produce a cyanotoxin that poses a health risk to the ecosystems and people living near the lake. HABs have been linked to excessive nutrient loading in lakes and reservoirs. There are various nutrient sources in Utah Lake, including nutrients from tributaries, surface runoff, effluents, stormwater, groundwater, and atmospheric deposition. The objective of this study is to use nutrient measurements and remote sensing imagery to examine any potential correlations between nutrient concentration and HABs distribution in the lake and to visualize how the HABs vary spatiotemporally. Measurements of ammonia, nitrate, nitrite, and phosphate were conducted over the course of a 5-week period in the summer of 2022 as well as 1 week of on-lake sampling. The measurements were used to interpolate the nutrient concentration in the entire lake. The interpolation maps were then compared against a band ratio from Landsat satellite imagery which is a good indicator of levels of chlorophyll a, a pigment-protein within algal blooms. These interpolation maps were also compared against an interpolation map made of phycocyanin concentrations, another pigment-protein within algal blooms, measured at each sampling site. The preliminary results have shown the highest correlation between phosphate and nitrite concentrations to the algal blooms in Utah Lake. The highest concentration measured was 2.96 mg/L of phosphate at the Hobble Creek downstream sampling site, the next two highest at 2.29 and 2.17 mg/L were also phosphate measurements taken at downstream sites. The nutrient with the highest average concentration was nitrate with an average of 0.46 mg/L. Observations from this study could be beneficial for decision-makers to prioritize the areas for HABs management and establish in-lake nutrient standards to minimize HABs occurrence and frequency.

Lin, Jason

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Jason Lin *Costas Lyssiotis* *Mengrou Shan*

Abstract Name: Targeting Malic Enzyme 1 Dependence in Pancreatic Cancer

With a 5-year survival rate of only 11%, pancreatic ductal adenocarcinoma (PDA) is projected to become the second leading cause of cancer-related death in the U.S. by 2023. While the outlook for other cancers has significantly improved in recent years, the survival rate for PDA remains stagnant. This is largely due to the fact that effective treatments for PDA do not exist. Thus, there is a pressing need to explore new therapeutic approaches and drug targets. Metabolism in PDA is unique in that the tumors are often accompanied by extreme inflammatory responses and subsequently, elevated intratumoral pressure and limited access to nutrients by PDA cells. Normally, such harsh, nutrient-deprived conditions would cause a significant increase in oxidative stress and eventually, programmed cell death. However, PDA cells are able to survive and thrive in these conditions. It is predicted that pancreatic tumors must've altered their metabolism to facilitate survival and proliferation, and thus presents potential exploitable therapeutic vulnerabilities. Previously, the Lyssiotis team reported that PDA cells utilize a metabolic pathway to manage oxidative stress through the maintenance of NADPH and glutathione (GSH). Recently, our result suggests that inhibition of the final enzyme in this pathway, malic enzyme 1 (ME1), profoundly inhibits growth across a large panel of PDA cell lines and PDX-derived primary PDA cells generated with doxycycline-inducible short hairpin RNAs that target ME1. In addition, we also developed a germline Me1 knockout mouse strain that is not embryonic lethal, and these mice matured to adulthood without observable phenotype. While PDA cells are dependent on ME1 activity for survival, normal cells are able to tolerate ME1 inhibition. Altogether, these results highlight the importance of understanding the role of ME1 in PDA tumor metabolism and present ME1 as a potential target for therapeutic vulnerability in PDA.

Lindaas, Andrew

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

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Andrew Lindaas *Grace McLean* *Clare Palen*
Haoran Zhu

Abstract Name: Using Survey Data to Report on Low-Income Household Experiences Shopping at the Eau Claire Downtown Farmers? Market

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. Administrative data on program utilization suggests that most SNAP households shop at the ECDFM using the MMP relatively infrequently. This poster presents data from surveys of SNAP shoppers at the ECDFM in 2022 (N=349) to learn more about their experiences using the program including what limits their shopping at the market and what might increase their ability to shop at the market. Our results indicate that the most significant limitations to shopping at the ECDFM were the market location/hours, SNAP benefits running out and just not remembering. Correspondingly, the most mentioned things that would encourage more frequent shopping at the ECDFM were expanded market locations/hours, a larger match amount and also being reminded. Among our other key findings are that the ECDFM MMP provides many benefits including reducing food insecurity among EC SNAP households. This poster is connected to another submitted poster analyzing a variety of administrative data from recorded transactions of SNAP shoppers using the ECDFM MMP.

Lindros, Lily

Institution: ***CA - University of California - Merced***

Discipline: Sociology

Author/Contributors:
Alexia Wasson *Lily Lindros*

Abstract Name: Blockbusting and Racial Transition in Washington, D.C.

Blockbusting is the intentional action of one or more real estate agents to provoke white flight and fear in a previously racially homogeneous area, in order to sell properties for high profit to racialized minority groups. There is limited research on the causation of blockbusting, its distinguishing factors, and the living conditions in these neighborhoods. Our research aims to address these through a case study of Petworth, Washington, D.C., a neighborhood which underwent significant racial transition between 1950 and 1970, showcasing examples of possible instances of blockbusting and its mechanisms and key actors. Based on previous indications of blockbusting researched in the same area, our analyses explore the mechanisms of racial transition and possible blockbusting in Washington, D.C. and its impact on neighborhood disparities. While previous literature has often reinforced a dichotomous argument of either a structural model of racial transition (for example, invasion and succession) or an agent-based narrative (focusing on the influence of both white and Black individuals involved in blockbusting), this case study explores the circumstances which directly affected the racial transition and subsequent disinvestment of Petworth while bridging previous methodologies to provide a greater understanding of blockbusting as a practice. This is accomplished through a mixed analysis of both quantitative profit and loss statistics in home sales as well as individual narratives from oral histories. Oral histories from Washington D.C. residents are analyzed to examine blockbusting on a more personal level rather than at a group level. The sources come from three different oral history archives alongside property records from the Office of Tax and Revenue's (OTR) real property tax database. Preliminary results find repeating instances of likely motives for blockbusting as well as a complex story of profit and loss by potential blockbusters.

Lindstrom, Spencer

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Physics/Astronomy

Author/Contributors:
Spencer Lindstrom,
Ken Menningen,
Shannon Riha

Abstract Name: Using SEAL and HARPOON to Find Potential Water-Splitting Oxide Semiconductor Electrodes

Photoelectrochemical water splitting is a potential way to lower our consumption of fossil fuels. There are numerous potential elements to be used in electrodes. While III-V semiconductors exhibit superior light gathering properties, metal oxide semiconductors generally cost less and are more robust. The Solar Energy Activity Laboratory (SEAL) 1 and the eterogeneous verpotential eutralization (HARPOON)2 are simple experiments that can quickly scan for suitable oxide semiconductors. The SEAL experiment measures photocurrent, and the HARPOON experiment measures oxygen production efficiency. An evaporative spotting procedure is used to apply the metal oxide to FTO plates. The FTO plates are then tested using the SEAL and HARPOON systems. Electrodes made of oxides of Pd, Ru, Fe, In, and Ni were produced in our laboratory and evaluated using the SEAL and HARPOON experiments. This presentation will communicate the preliminary results.

Link, Brayden

Institution: ***NY - SUNY Brockport***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Brayden Link,
Michael Chislock

Abstract Name: Evaluating Internal Phosphorus Loading and Zooplankton in Mediating Algal Blooms in Loon Lake, Wayland, NY

Loon Lake, Wayland, NY, has been monitored by volunteers since 1994 via New York's Citizens Statewide Lake Assessment Program (CSLAP). This mesotrophic lake is characterized by seasonal shoreline algal blooms that are sometimes dominated by cyanobacteria. Recent monitoring has detected elevated deep-water concentrations of dissolved nitrogen and dissolved phosphorus during the summer months. Therefore, I focused on the dynamics of these major nutrients, commonly linked to harmful algal blooms (HABs), throughout the water column. I also collected associated in situ water chemistry data using a YSI multiparameter sonde (e.g., water temperature, dissolved oxygen, oxidative-reductive potential, pH, and in vivo chlorophyll/phycocyanin). In the summer, it is common for lakes to stratify which is when the water column separates into different layers depending on the temperature. When stratification happens, there is little oxygen at the bottom of the lake which causes the sediments to release phosphorus. In 2022, Loon Lake thermally stratified and dissolved oxygen in the bottom layer was depleted two months earlier than in previous monitoring years. As a result, we observed significant accumulations of phosphorus released from lake sediments in early summer and mid-summer concentrations were more typical of September in previous years. This led to a mid-summer cyanobacterial bloom in the northern portion of the lake that subsequently accumulated on the shoreline. Additional monitoring data are necessary to determine if 2022 was an anomalous year or indicative of a trend of earlier summer stratification and increased internal loading of phosphorus, leading to a heightened risk of cyanobacterial blooms. A trend like that could have detrimental effects on the lake and those who live around it.

Linse, Kirin

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Music

Author/Contributors:
Aleah Vincent

Abstract Name: Equilibrium Quartet presents Keen by Roshanne Etezady

Equilibrium is a saxophone quartet at the University of Wisconsin-Eau Claire. The quartet was formed in Sepember of 2021 and is composed of undergraduates students, all with different majors: music education, applied instrumental music, integrated strategic communication-advertising, and biology. In our time as a quartet, we have performed in masterclassses, auditioned for competitions, and prepared multiple recitals.As an ensemble, we are interested in exploring timbre, balance, and color within the constraints of saxophone quartet. The saxophone is an incredibly flecible instrument capable of producing a wider range of wounds and colors. Roshanne Etezady's piece,Keenutilizes the saxophone quartet's unique ability to blend into one homogenous sound by leaning on droning characteristics to drive the piece. Etezady also highlights the individual instrument's timbral qualities in solo passages. We chose this piece because it explores a wide range of colors and challenges musicians to maintain consistent blend and balance in the extreme registers and dynamics of the saxophone.We are excited to share the music of Roshanne Etezady, a contemporary classical composer who uses timbre and balance to capture intense emotions in the pieceKeen. To keen means to express grief with a loud and sustained cry of sorrow. Etezady uses the concept of keening to stucture the piece and model the emotional affect of the title. However she goes beyond imitating this human response to grief. The unison drones are contrasted by shifting melodic lines andintense dissonances that further evoke a distressing affect. In our performance, we hope to convey this intense feeling of sorrow and highlight the work of composer,Roshanne Etezady.

Liske, Emmeline

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Megan Schmitz *Emmeline Liske* *McKenna Girdeen, Nicholas Phillips*

Abstract Name: The Life and Music of Florence Price

Born in Little Rock, Arkansas, Florence Beatrice Smith Price (1887-1953) was America's first significant African American woman composer. The purpose of this lecture-recital is to uncover how Price's compositions are a historic symbol for traditional black composers today, revisit her significance in music history, and provide a biographical overview of her life through the exploration of her piano compositions and experiences composing as a Black woman. Graduating with a double degree in solo organ and piano teaching from the New England Conservatory of Music in 1906, Price was deeply influenced by mentors who helped reinforce an African American identity in her music. While living through the Great Migration and the Great Depression, Price slowly gained recognition throughout her lifetime as a prominent figure in the black community by writing piano compositions that included the "juba dance" and other Afro-American characteristics. Linda Rae Brown's findings in The Heart of a Woman: The Life and Music of Florence B. Price, reveal Price faced issues with conflicting roles both as a woman and a composer. With increasing racial tensions in the late 1920s, Price was denied access to professional music organizations such as the Arkansas Music Teachers Association. Although she lived a moderately private life, analyzing gender and race-based marginalization through the lens of Black feminism illustrates how Price challenged prejudicial social structures and contexts. Price challenges these notions by advocating for herself as a Black woman composer, eventually paving the way by fusing Euro-American structures with elements of her own American cultural heritage by emulating plantation melodies and African American folk melodies in her music. This lecture-recital is part of a growing momentum to give further attention to Price's piano compositions and life, which deserve continued further attention from scholars, teachers, and pianists.

Lisle, Aaron

Institution: ***MN - Bemidji State University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Aaron Lisle,
Katie Peterson

Abstract Name: Development of a Selective Fluorescent Probe for H2S

Hydrogen sulfide (H2S) is gaseous signaling molecule that regulates vasodilation, cardiac function, inflammation, and serves as a cytoprotectant. Endogenous concentrations are in the micromolar range, with abnormal concentrations liked to Parkinson's and Alzheimer's diseases, chronic inflammation, and cardiovascular diseases. The goal of this project is to develop a selective fluorescent probe for the detection of H2S that can locate and quantify this gasotransmitter in living cells. Such an imaging tool will enable the biological roles of H2S to be determined in more detail. The probe features the fluorescent molecule coumarin shielded by a H2S sensitive group, capable of undergoing two subsequent nucleophilic reactions with H2S. Reaction with H2S removes the shielding group, generating an increase in fluorescence. The development of a synthetic pathway for the shielding group and probe will be presented, in addition to any sensitivity and selectivity tests that have been conducted. Details on the methods and completed synthetic steps along with characterization via 1H NMR will be the focus.

Lisowski, Leah

Institution: ***IL - Trinity Christian College***

Discipline: Biology

Author/Contributors:
Leah Lisowski,
Robert Boomsma

Abstract Name: The Effect of Co-Culturing H9c2 Cardiomyocytes with Mesenchymal Stem Cells on the Expression of Cardiac Troponin-T

Previous research has shown that mesenchymal stem cells (MSC) have the ability to improve heart function after myocardial infarction in mice, but the specific mechanism that mediates this therapeutic effect is unknown. It is possible that MSC are able to improve the ability of cardiomyocytes to contract. Cardiac troponin T is a regulatory protein that aids in muscle contraction of the heart. Levels of cTnT can be correlated to cardiomyocyte differentiation. In order to determine the effect of MSC on cardiomyocyte (rat H9c2 cells) gene expression of cTnT, mouse MSC were co-cultured with rat H9c2 cells in DMEM and 10% FBS; control H9c2 cells were cultured without MSC. After 2 days, the media was changed to DMEM + 1% heat-inactivated horse serum for 1, 3, 5, or 7 days to stimulate differentiation of H9c2 cells. RNA was extracted (RNA-4-PCR; Ambion), treated with DNAse to remove genomic DNA, and reverse transcribed to create cDNA (iScript; BioRad). Previously, rat-specific primers were identified to allow the quantification of rat cTnT in H9c2 cells during co-culture with mouse MSC. Gene expression was monitored with qPCR using SYBR-Green (BioRad) with GAPDH as the reference gene. Water and no-RT controls were included. Preliminary results demonstrated a transient increase in cTnT expression in H9c2 cells after 3-5 days in co-culture. Additional studies will confirm and extend this data. These results aspire to describe the mechanism by which MSC work to prevent the functional loss of cardiac function after myocardial infarction.

Lisowski, Reece

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Trittelwitz,
Jessie Bielak,
Reece Lisowski,
Andrew Mehus,
Madilyn Tokarski

Abstract Name: Yearly Survival and Growth Rates of Propagated Fatmuckets (Lampsilis siliquoidea) in Central Wisconsin

Freshwater mussels are key members of riverine ecosystems and are crucial for improving water quality. Mussels serve as valuable indicator species and suffer from many environmental disturbances, but despite their importance, large gaps remain in knowledge of freshwater mussels in Wisconsin. We measured the survival and growth of mussels exposed to ambient conditions in two streams in Central Wisconsin. Both selected streams included those that support diverse mussel assemblies. On October 29th, 2021, we received 120 Fat Muckets (Lampsilis siliquoidea) from the Genoa Fish Hatchery, measured, then released them into suitable areas on the Mill Creek; the Plover River Near Stevens Point, WI. Before release, mussels at the Mill Creek site averaged 1.853 cm in length, 1.03 cm in width, and 0.52 cm in thickness. At the Plover River site, mussels averaged 1.859 cm in length, 1.068 cm in width, and 0.546 cm in thickness. We utilized silos to encompass the 1.5-year-old mussels. Each site has 1 silo, containing 15 individuals per silo. Our objective is to determine seasonal survivorship and growth rates throughout our year-long study. Experimentation at these sites will provide an indication to determine which areas are suitable for future reintroductions. We expect 1) Mussel growth and survival will be significantly reduced in the winter months, compared to the summer months. 2) Mussel growth and survival will be significantly different between the two sites. These sites were measured monthly beginning April 21st and lastly October 21st, 2022. This is part of an ongoing study through the University of Wisconsin – Stevens Point's student chapter of The Wildlife Society.

Lister, Joshua

Institution: ***TX - San Jacinto College***

Discipline: History

Author/Contributors:
Josh Lister

Abstract Name: The Galveston, Houston and Henderson Railroad: The Old Reliable Shortline, the Longest Little Railway in Texas

This paper tells the story of the Galveston, Houston and Henderson Railroad, the railway that operated longer under its original charter than any other railway in the United States. Running from the Port of Galveston to the city of Houston, it played an integral part in Texas importing and exporting as well as human travel. The railway included the first causeway and bridge connecting Galveston Island and the mainland. The railway even played an important role in the recapture of Galveston from Federal forces during the Civil War—the only port recaptured by the South during the war. The railroad also turned Houston into a primary hub for trade and travel, accounting for its growth as a major city. Throughout its history it often became embroiled in legal actions especially during Jay Gould's ownership and leasing of the Galveston, Houston and Henderson Railroad. Today the railroad has been absorbed by the Southern Pacific and no longer operates independently. What remains are some of the tracks and a museum in Dickinson.Based on primary sources, such as local newspapers, as well as appropriate secondary sources, this paper tells the unusual story of the 136-year-old, fifty-mile trunk line that originally connected Houston with the world through Galveston's port. Thus the shortest railway in Texas has the longest history.

Liu, Chaonan

Institution: *IN - Purdue University Main Campus*

Discipline: **FAN Abstract**

Author/Contributors:
Zahra Tehrani,
Chaonan Liu

Abstract Name: **Evaluation of a Pilot Program for Improving Mentored Undergraduate Research Experiences in STEM**

The Entering Research and Entering Mentoring training curricula have been established to promote positive outcomes for undergraduate and graduate researchers and improve relationships with faculty mentors. However, evidence related to the impact of mentorship training for graduate students who are mentoring undergraduate researchers is limited. Furthermore, the effect of implementing both frameworks in a single context is unclear. A pilot program guided by both curricula was designed to connect underrepresented undergraduate students to high-quality mentored research experiences in STEM at Purdue University. This program offered mentor training to graduate students using the Entering Mentoring framework, as well as practical mentoring experience by matching mentors with students from the Honors College. This study assessed and evaluated the pilot program after one semester. Data was collected from 27 graduate student research mentors who completed a credit-bearing mentor training course and their undergraduate mentees. By incorporating certain elements of the Entering Research curriculum into their mentor-mentee compacts/syllabi, mentors were equipped with student-centered and evidence-based tools to foster their trainee's development as researchers. Other activities from the Entering Research curriculum were implemented through a community of practice for undergraduate researchers. Results indicate that the program was effective in helping graduate student mentors gain in their mentoring skills of undergraduate researchers and mentors were satisfied with the training and practicum experience of the course. Undergraduate mentees reported significant gains in knowledge, skills, and researcher identity. Furthermore, 90% of mentees reported their intention to remain in the same lab during the following semester.

Liu, Ju-fang

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Julia Swanson,
Gabby Stensland,
Ju-fang Liu

Abstract Name: **Multicultural Perspectives in Aphasia**

Language is the production of our thoughts, cultures, and lives. It converts our minds into a more concrete form that allows people to understand each other. It also associates closely with our habits and mentality. The speech-language-hearing sciences field is one of the whitest fields in the U.S. and most research is biased toward the white-dominant population while some racial and ethnic minorities are more likely to suffer severe strokes and disparities in long term outcomes. Whereas there is almost forty percent of non-white in the United States of America, signaling the existence of diverse mindsets in which the disorders and treatments cannot be concluded only from the existing data. The mental health, the related cultural background, and the customs of different ethnicities may broadly impact the therapy and the results. In the current speech-language-hearing science field, we barely examine clients through the lens of mental health and multiculturalism. This single subject design study is to explore diverse perspectives about aphasia reported by marginalized clients with aphasia. Two participants were interviewed about their views about aphasia. The interview questions were modified from an explanatory model approach proposed by Kleinman and Beeson (2006) to explore the participants' understanding of the meaning of illness. Thematic analysis will be conducted. The results of this study will help further understand and help meet the needs of individuals who belong to an ethnic minority group and are affected by aphasia.

Liu, Qianlong

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Connor Garland,
Erica Kladar,
Qianlong Liu,
Brett Neumann

Abstract Name: The Determinants of Income Inequality in Rural Wisconsin and Policy Implications

Rural communities in Wisconsin are currently facing many economic challenges, namely high levels of poverty, declining population, lack of high-quality services, and poor infrastructure. These are issues that call for innovative and creative approaches and require prompt attention. This project is a collaboration of three faculty members at the Department of Economics at our institution. Our project has three main goals. First, we propose to measure regional, particularly rural, income disparities while identifying the main explanatory factors with American Community Survey data and quantile regression analysis. Second, we will examine and quantify the impact of entrepreneurship, growth of immigrant populations and access to broadband on rural incomes in Wisconsin. Third, we will offer insights and recommendations to Wisconsin policy makers. Our research findings will help assess economic needs and resources and provide policy options to address challenges facing rural communities.

Liu, XUEJUN

Institution: ***WI - University of Wisconsin-Stout***

Discipline: FAN Abstract

Author/Contributors:
Jason Liu *Bee Xiong* *Cole Grubbs*
Wei Shi

Abstract Name: Fostering the Implementation of Industry 4.0 in SMEs: A Life Cycle Cost Analysis

Many different worldwide initiatives are promoting the transformation from machine dominant manufacturing to digital manufacturing. The implementation of Industry 4.0 in manufacturing industry is continuing to grow, as shown by the extensive research, development, and standardization regarding Industry 4.0. However, Small and Medium Manufacturing Enterprises (SMEs) encounter many barriers and difficulties (economical, technical, cultural, etc.) in the implementation of Industry 4.0. A deficiency of Industry 4.0-related knowledge and experience is still a serious barrier to decision-making in Industry 4.0 implementation. Operations and management education should prepare students for the future by equipping them with new technology and problem-solving skills through research experience. Examples from the field of Industry 4.0 include system life cycle cost analysis, data analytics, cloud computing and simulation, which will be fast growing Industry 4.0 within the next decade. The implementation of Industry 4.0 comprises decision making, cost and benefit analysis, leadership, machine learning and data analysis—all the elements potentially present in an operation and management research. This can be an effective and versatile tool for advancing high-quality undergraduate research in operation and management. This study develops a methodology to evaluate the impact of Industry 4.0 implementation on life cycle costs to support decision-making of Industry 4.0 implementation in SMEs based on the factors involved in LCC, causal relationships, ROI (Return on Investment). Students' efforts are made in the disciplines of management, supply chain, financial management, simulation, data analytics and manufacturing engineering. Students participate in original research activities designed to empower and prepare students for advanced degrees and careers in operations and management, and train students in interdisciplinary and collaborative thinking necessary to solve real-world problems. Our efforts in this study are separated as a few different research projects and these projects can be applied to interdisciplinary undergraduate teaching and improve our effectiveness in collaborative problem-solving.

Lloyd, Madison

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Rose,
Brennan Vanlandingham,
Jillian West,
Rachel Baltuff,
Alex Kruschke,
Madison Lloyd

Abstract Name: Role of Motivation on Academic Success

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation in education is and how it impacts the academic success of college students. Factors that will be studied include intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation students vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions adressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Locano, Leanne

Institution: ***CA - San Diego State University***

Discipline: Public Health

Author/Contributors:
Leanne Locano *Karina Moyano* *Valesca Largaespada*, *Jesse Nodora*

Abstract Name: The Cancer Health Equity Collaborative: Does it effectively support cancer related stakeholders in the San Diego region?

The Cancer Health Equity Collaborative (CHEC), supported by the UC San Diego Moores Cancer Center, seeks to foster networking and improve access to cancer prevention, detection, treatment information and resources among underserved communities. From July 7th to July 29th, 2022 we queried CHEC members using a brief on-line survey created using Qualtrics, followed by a virtual interview that was scheduled with 10 participating organizations over a 2-week period. The purpose of our assessment was to understand and evaluate the effectiveness of CHEC among participating stakeholders. The collaborative consists of 39 organizations. Among these, 24 participated in the online survey (62% response rate). Ninety five percent (95%) of respondents agreed that CHEC's mission aligned with their own organization's goals and CHEC supports important community needs related to cancer. Eighty three percent (83%) of participants strongly agreed that CHEC meets the objective of sharing cancer-related resources and tools to better inform stakeholders and the community. Sixty six percent (66%) of respondents stated that they share CHEC resources with others. One organization reported sharing information with as many as 1,000 individuals. Among those that participated in the on-line survey, 10 participated in the virtual interviews. One hundred percent (100%) of those interviewed reported that CHEC has in some way positively supported their organization by providing resources, networking opportunities, and necessary cancer information. Overall, our assessment concluded that CHEC is effective in providing access to information for cancer stakeholders in San Diego and has benefited organizations through facilitating networking, sharing resources, and educational presentations. Results highlight the importance of participating in CHEC in order to gain a comprehensive and an all-encompassing perspective on cancer.

Locicero, Cale

Institution: *LA - Louisiana State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Cale Locicero,
Fatimat Badmus,
Christian Bailey,
Frank Fronczek,
Rendy Kartika

Abstract Name: **Stereoselective Synthesis of ?-Quaternary ?-Hydroxyketones**

In medicinal chemistry and drug discovery, quaternary centers, which are three-dimensionally complex chemical systems consisting of a carbon atom bound to four distinct carbon substituents, are a vastly important synthetic target for the development of new drugs and therapeutic agents. Quaternary centers have been shown to confer drug molecules enhanced binding selectivity to target proteins associated with human diseases, and molecules decorated with high percentages of quaternary centers are highly coveted as drug candidates. Despite the importance of quaternary centers, exploration of organic molecules with quaternary centers in drug discovery remains limited due to the considerable difficulties associated with the synthesis of these sterically congested systems. To combat this synthetic deficiency, we have developed a selective and efficient synthetic reaction for the installation of quaternary centers at the alpha position of cyclic carbonyl compounds. The hypothesis for the mechanism of the reaction is as follows. The starting material is subjected to an organomagnesium reagent and undergoes a reaction known as a Grignard addition. The two proximal oxygen atoms are chelated to a magnesium ion, and this chelation promotes the Claisen rearrangement of the neighboring triple bond, thereby generating the product. Amazingly, this reaction sequence produces the desired structural motif with excellent diastereoselectivity and high yields. For these reasons, this project has potential to be highly impactful in synthetic biomedical research endeavors. This reaction has been extended to many electronically diverse chemical environments, and these exciting results are promising for the continued expansion of the substrate range.

locke, qadira

Institution: *FL - New College of Florida*

Discipline: **International Studies**

Author/Contributors:
Qadira Locke

Abstract Name: **Women's Fashion and Sumptuary Laws in the Joseon Dynasty Korea (1392-1897)**

Primary focus of this paper will be in women's court fashion pertaining to how the color of clothing, embroidery, hairstyle, accessories and circumstance can be used to denote status all while adhering to the hierarchy of strict sumptuary laws put in place to encourage a confucianist society. This paper will cover foundational Information, expected clothes for ceremonies, clothes as expected by position, and lastly a trend timeline. The research will examine Sumptuary Laws in shaping the modesty culture during the Joseon period of 1392 to 1897. Aiming to connect the dots of women's fashion and the philosophy of Koreans at the time. platforming how fashion was a large component in shaping the national identity of Joseon Korea that we still see traces of today.

Locklear-White, Rene

Institution: *NC - University of North Carolina at Pembroke*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Rene' Locklear-White

Abstract Name: Mapping America?s Native Food Trail

The purpose of this project is to create a new digital asset to help reawaken our Indigenous people and the public to Indigenous culinary traditions and sustainable practices by American Indians in the United States. This project maps out those contributing to our awareness of Indigenous pre-contact diets, America's Native chefs, Native food authors and Native food films to bring them together into America's NativeFoodTrail.org.Is it possible to reconnect our Native people to our Native foodways and can this reconnection help heal? Could promoting traditional Native diets help turn Americans' declining health around? Contemporary health issues facing American Indians include higher rates of drug abuse, alcoholism, obesity, diabetes, cancer, poverty and malnutrition that compound post-traumatic stress disorder, depression, historical trauma, suicide and genocide. I believe food is medicine and I believe one way to help decrease health disparities is by reconnecting to our Native "First Foods". This new website could help chefs like Sean Sherman, founder of The Sioux Chef draw attention to a "long-forgotten Native culinary tradition". Native restaurants could include: cafegozhoo.com; owamni.com; makamham.com/cafeohlone; and wahpepahskitchen.com. NativeFoodTrail.org could highlight award-winning documentaries like "Return: Native American Women Reclaim Foodways for Health and Spirit". In this film, filmmaker Karen Cantor draws attention to the fact that American Indians have trouble tolerating most foods sold in commercial grocery stores, that "Over 15% of Indigenous Americans have type-2 diabetes"; and Native Americans' lives are cut short due to declining health and a lack of access to their own foods. Mapping America's Native Food Trail is also a decolonizing way to create new possibilities to help reverse American Indians' health conditions by empowering Native Peoples as they struggle to survive assimilation and reclaim their ancestral foodways. A bonus is to encourage education, healing, forgiveness, reconciliation, and unification around food. Let's reclaim our wellness.

Locy, Nicholas

Institution: *NC - Western Carolina University*

Discipline: History

Author/Contributors:
Nicholas Locy

Abstract Name: The Korean War: China's New Precedent

The Korean War from 1950 to 1953 was the first international conflict that the new government of mainland China, the Chinese Communist Party or CCP, would be involved in after the end of the Chinese Civil war in 1949. The deployment of the United States Navy to the Taiwanese straits forced Mao Zedong and the CCP leadership to stop their preparations to invade Taiwan and instead shift focus to supporting the Democratic People's Republic of Korea's invasion of the Republic of Korea. While originally calling for the complete unification of Korea under the DPRK, as the war progressed the goal of the CCP in the war evolved to match the challenge that the United States and NATO posed. The relative success of the Chinese forces upon their intervention in the war saw a shift from the previous centuries of China being routinely beaten by imperial powers such as the Japanese and British Empires.Using evidence from letters, translated from Chinese to English, written by Mao Zedong as well as accounts of decision-making at the highest levels of CCP leadership, this paper shows the shaping of China's goals for the Korean War, their involvement in the war, and how the war impacted the development of their foreign policy going into the Cold War Era and today. China has gone from being subject to the demands of other powers to being a strong and independent nation. While the end of the Korean War was a stalemate, it set a new precedent for the Chinese people to be able to compete on the world stage with other world powers such as the United States.

Loeser, Grace

Institution: *NC - Elon University*

Discipline: **Biology**

Author/Contributors:
Grace Loeser

Abstract Name: **Investigating Biofilm-producing Phenotypes in Clinical Staphylococcus aureus Isolates: Implications for Infection Persistence in Cystic Fibrosis Patients**

Pseudomonas aeruginosa and Staphylococcus aureus dominate infections in cystic fibrosis (CF) patients, and coinfection with these two bacteria leads to poor outcomes and a rapid decline in prognosis. The mechanism for these worse outcomes as a result of coinfection is poorly understood, though the biofilm-producing ability of S. aureus is thought to play a role. Therefore, the aim of this research is to determine the biofilm-producing ability of clinical S. aureus isolates from CF patients in order to understand the role that biofilms may have during infection by these isolates. Biofilms are a build-up of bacteria on a surface covered in a sticky substance made of polysaccharide. This polysaccharide can lead to immune evasion and infection persistence in CF patients by creating a physical barrier that prevents antibiotics from working properly. In order to evaluate the presence of biofilms, we grew each isolate on Congo red agar, a differential media, and observed the appearance of colonies. Smooth, red colonies reflect normal producers of biofilm, while maroon, rough-textured colonies indicate overproducers of biofilm. Results indicate that many of the clinical isolates examined are overproducers of biofilm and thus likely contribute to the chronic nature of infection in the CF patients they originated from. In the future, this data will be combined with information we have obtained about how these same S. aureus clinical isolates interact with P. aeruginosa. Overall, this work will add to our understanding of how biofilm production and potential persistence of S. aureus relates to its ability to coinfect with P. aeruginosa, and may provide valuable information to help us better treat these chronic infections.

Loftin, Evelyn

Institution: *VA - Liberty University*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Evelyn Loftin

Abstract Name: **No One Will Talk: The Horrors of Sexual Trauma in the Holocaust**

An anonymous rape victim once said, “Not enough people understand what rape is, and, until they do..., not enough will be done to stop it.” Jewish women posed a unique threat to the Nazi ideal of a “perfect” Aryan race, with their identities being both Jewish and female. Every victim of the Holocaust has valuable experiences to share, yet little attention has been devoted the multitude of women who suffered from sexual trauma. Arguments against the study of violence towards women in the Holocaust exist; however, it is important to note this violence independently because of the targeted sexual connotations that were simultaneously inflicted. Sexual violence is usually expressed in the form of rape, forced abortions, and sex work; Nazi practices went further. They attacked women’s femininity by shaving their heads, beating them, stripping them naked and mocking them. Such acts of violence were traumatizing to these women. Victims stated that this trauma was so normalized and ingrained that they would become numb to the concept of assault. While many would simply await their time of death or assault, others would take power over their situation and sexually barter themselves for potential survival. The Nazis goal was to eradicate specific people group to create the perfect race without impurities. They would humiliate and degrade people before killing them, forcing their last moments on this earth to be excruciatingly painful and utterly humiliating. Following liberation, the trauma these women endured was ignored, and they were left to heal and morn in silence.

Logan, Anja

Institution: *MN - St. Olaf College*

Discipline: Mathematics

Author/Contributors:
Anja Logan,
Nathaniel Mersy,
Taylor Smith,
Joash Daniel

Abstract Name: **Quantifying organic phases in coral skeletons at the nanoscale**

Nanoscale mineral structures of coral are not well understood. When corals build their skeletons, they are composed of nanoscale crystalline structures. It is known that coral skeletons are affected by ocean acidification and climate change at the macroscale. However, understanding how the coral skeleton-building process functions at the nanoscale would allow for better modeling and prediction of how coral might fare under varying ocean conditions and climate changes. Specific isotopes in coral skeletons can mark the organic or mineral parts of the skeletons, and thus can be used as indicators of different phases in the coral skeletons. Our goal is to statistically investigate quantitative relationships that exist between different organic and mineral associated isotopes in coral skeletons. Multiple corals were lab-grown under various controlled conditions at St. Olaf College, and they were analyzed at the nanoscale by a mass spectrometer to extract concentration data for specific isotopes present throughout the skeletons. We use Pearson correlation to measure the strength of the relationship across coral isotopes and Mander's coefficient to measure co-occurrence. Co-ocurrence looks at the high concentration clusters of isotopes across isotope pairs. Knowing the quantitative co-occurrence of isotope pairs in the coral skeletons helps in understanding the spatial distribution of organic molecules within the coral skeleton, which in turn can help us better understand the growth process of the coral skeleton itself.

London, Natalie

Institution: *PA - Duquesne University*

Discipline: Biology

Author/Contributors:
Natalie M. London,
Yashika S. Kamte,
Lauren A. O'Donnell

Abstract Name: **Virus infection of the brain induces neural stem cell loss in juvenile mice**

Virus infections in the central nervous system (CNS) can lead to devastating neurological outcomes, including cognitive dysfunction, seizures, and death, especially in newborns and young children. Therapies for CNS infections are limited, and little is known about how the brain responds to the inflammatory environment created by the virus.In order to examine the effects of a viral infection in a younger host, we used the CD46+ mouse model, where the human receptor (CD46) for measles virus (MV) is expressed only on neurons in the brain. In the CD46+ model, juvenile mice (10 days postnatal) develop signs of illness (e.g. tremors, weight loss) during infection, but ~80% ofmice will survive into adulthood. Here, we analyzed the fate of neural stem cells (NSCs) in juvenile CD46+ mice. NSCs are key to brain development and repair, giving rise to new neurons in the growing brain. In the CD46+ model, NSCs are not infected directly by MV, but are bystanders to the immune response. Using flow cytometry to count NSC numbers, we found a striking loss of NSCs early in infection. We hypothesized that the loss of NSCs was due to apoptosis, which is a form of cell death.Thus, we quantified the levels of proteins that are activated during apoptosis (PARP and Caspase-3) using western blot analysis. Tissue samples from the hippocampus and subventricular zone were examined, as these brain regions are rich in NSCs. We found significantly higher levels of both activated PARP and Caspase-3 in MV-infected mice (n=6 mice/condition), suggesting that apoptosis occurs during infection. Current studies aim to quantify the numbers of apoptotic cells in each brain region, and to identify the type of cell undergoing apoptosis. Together, our studies suggest that viral infections in the brain can dramatically reduce NSCs, even when the host survives infection.

Long, Neka

Institution: *TN - University of Tennessee at Chattanooga*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Neka Long,
Reetesh Ranjan

Abstract Name: **Effects of Injection Characteristics on the Particle Deposition within Human Airways**

Aerosolized drug delivery through the human airways is an effective strategy for treating pulmonary diseases such as asthma, cystic fibrosis, chronic obstructive pulmonary disease, and pulmonary infection. Targeted regional deposition of the drug in the diseased pulmonary regions is key to effective treatment with minimal side effects. While recent advancements in radiological imaging techniques have allowed for detailed anatomical information to guide treatment procedures, such information still tends to be limited leading to an inefficient treatment. Thus, computational tools can provide further insight to guide and enhance the efficiency of the treatment procedure. In this study, we employ large-eddy simulation (LES) as a computational tool to investigate the airflow and particle deposition characteristics within the upper human airway. LES of one-way coupled particle-laden flow within the human airways is carried out by employing the widely popular Eulerian-Lagrangian strategy, where the airflow is simulated using Eulerian formulation and the particles are tracked using a Lagrangian approach. We examine the effects of injection characteristics of the particles on their regional and global deposition within the human airways. The airway model considered in this study is adopted from the well-established SimInhale benchmark case where we consider a truncated portion focusing on extrathoracic and part of intrathoracic airways. First, the airflow features within the airways will be discussed in terms of the instantaneous and time-averaged behavior of the flow field. Afterward, the results from polydisperse injection of particles for regional and global deposition will be discussed and the global deposition fractions of three models of particle distribution will be compared.

Loock, Lauren

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Linnea Milner,
Lauren Loock

Abstract Name: **Mindfulness and Memory**

Purpose: Mindfulness may improve memory through promoting awareness of, attention to, and openness to information presented. The positive effects of mindfulness on memory may be seen even after brief, one-time interventions. However, mindfulness may only affect memory performance if the intervention is administered directly before retrieval rather than at encoding. Additionally, mindfulness might selectively affect some types of memory tasks and not others. Procedure: Participants will be randomly assigned to a mindfulness condition (a ten-minute mindfulness meditation) or a control condition (a ten-minute podcast about the history of mindfulness). All participants will study a list of words, either presented individually or as word pairs, and asked to memorize them for a later memory test. Participants will then take a memory test,item recognition for those who studied individual words or associative recognition for those who studied pairs. Some participants will listen to the podcast (mindfulness or control) before encoding the study list while others will listen to the podcast before retrieving the words at testing.Expected results: We will compare memory recognition performance, specifically false alarms, of participants in the mindfulness condition to those in the control condition. We expect that mindfulness should reduce false alarms only if the intervention is given directly before retrieval. However, we might find that mindfulness facilitates familiarity as a cue when making memory judgments. We expect larger differences in false alarms between the mindfulness and control groups for the item recognition task compared to the associative recognition task. Data collection is currently underway. Conclusions: Advancing or amending theories of mindfulness and memory could improve our understanding of human memory and also aid potential translations of research findings to practical applications. For example, would a brief mindfulness intervention presented before administering a classroom exam improve student performance?

Lopez, Ashley

Institution: *WI - Northland College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Elysabeth Lough *Ashley Lopez* *Alexandria Espinoza*
Danielle Sneyd

Abstract Name: **The Influence of Prior Exposure to Weapons on the Weapon Focus Effect**

The proposed study aims to further investigate if ownership of firearms decreases the weapon focus effect (WFE). When a weapon is present during the commission of a crime a witness is less likely to accurately remember details, specifically peripheral details, about the perpetrator's appearance compared to when no weapon is present. It is hypothesized that having prior experience with weapons, through ownership, decreases the WFE compared to no prior experience with weapons.The proposed study will be a 2(Gun Familiarity: gun ownership vs. no ownership) x 2(Weapon Presence: present vs. absent) between subject's design. Participants will come to a lab in groups of 1-10. After receiving and signing an informed consent, participants will watch one of the two mock crime videos that are approximately 42 seconds in length. Both videos depict a mock robbery in the woods where a young woman carrying a backpack is approached by a man who robs her. The robber either only uses his words while holding a backpack to demand her belongings (weapon absent condition) or holds a rifle to demand her belongings (weapon present condition). After watching the mock crime, participants complete filler activities for 20 minutes. Then, participants complete a survey about what they remember about the perpetrators' appearance, select from a 6-person target-present line-up, rate their confidence for the selection, and complete demographic information. Students will be thanked for participating and community members will receive $10.00.The accuracy of participants descriptions will be calculated (total correct details/(total correct + incorrect details)).A series of 2X2 factorial ANOVAs will be used to see if Weapon Presence and Gun Familiarity affected the accuracy, the number of correct details, and the number of incorrect details reported. We expect that those who own firearms will have higher accuracy compared to those who do not own

Lopez, Christina

Institution: *TX - Texas A&M University - Kingsville*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Chistina Lopez,
Matthew Alexander

Abstract Name: **Biodegradation of Oily Sludge Via the Use of Impellers and a Chemical Dispersant**

The presence of oily sludge from factories and wastewater treatment are a detriment to the state of the environment, as it contains many harmful and toxic substances, including polycyclic aromatic hydrocarbons (PAH), cycloalkanes, benzene, and similar compounds; benzene alone is a group 1A carcinogen, putting those in contact with it at risk for developing cancer. Though this is not a new issue, there has been an increased need for the treatment of oily sludge as its production only increases as time goes on. Numerous methods are used for the treatment of oily sludge and are continuously being modified and improving. The use of two-phase composting and the use of chemical hydrocarbon dispersants have both been proven effective in achieving significant removal of total petroleum hydrocarbons (TPH) present in sludge samples. Another method that this research in particular focuses on is the method of chemical dispersants and extended periods of agitation to achieve TPH removal. This research was an attempt to analyze the effectiveness of oily sludge dispersion and biodegradation in a controlled setting. A dispersant effectiveness test (DE) and biodegradation test were done using paddle and helical impellers, samples of West Texas Crude Oil (WTCO), Petroclean dispersant, and bacteria that was cultured in a bioreactor. The DE lasted 4 hours and the biodegradation took place over the course of 28 days. The results show the overall DE of each impeller, as well as the results of the biodegradation-- which had the most consistent success with the helical samples, particularly the sample inoculated with bacteria.

Lopez, Edson

Institution: ***IA - Iowa State University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Edson Lopez

Abstract Name: Impact of wastewater treatment plants' processes and operations on per- and poly-fluoroalkyl substances (PFAS) removal

Per- and poly-fluoroalkyl substances (PFAS) are contaminants of emerging concern. Due to their unique properties, they are used in everyday items such as cookware coatings, food packaging, and foams. However, PFAS are linked to harmful health and environmental effects, and are broadly distributed. The fate and transport of PFAS in wastewater treatment processes is poorly understood. Many perfluoroalkyl acid (PFAA) concentrations in treated wastewater effluent are higher during warmer seasons. This increase may be due to biological or physical effects on treatment systems and their microbial communities. Measuring carbon, nitrogen, and phosphorus is critical to quantify the microbial activity in wastewater treatment facilities (WWTFs) and understanding its impact on PFAS transformation. I quantified microbial nitrification, phosphorus absorption, and carbon respiration as indicators of microbial activity inside WWTFs. My results will indicate how temperature influences microbial activity , and resulting transformation of precursors PFAS to PFAAs throughout the wastewater treatment process. Microbial parameters are compared at the same WWTFs at different operational temperatures to see if there is any correlation between microbial activity and the transformation from precursor PFAS to PFAAs based on the change in temperature.

Lopez, Jesus

Institution: ***IL - Northeastern Illinois University***

Discipline: Social Work

Author/Contributors:
Jesus Lopez,
Deborah Klos Dehring

Abstract Name: American Media: Vice Grip on the influence and perspectives of Undocumented Immigrants of Latino Background in the United States

The growing racial tensions in the United States have reached a fever pitch, especially in educational settings. Little research has been conducted on how college students' views on undocumented immigrants in the United States is influenced by the media. Therefore, I propose to investigate the views and perspectives about undocumented immigrants in the United States at Northeastern Illinois University. I will investigate the correlation between media, specifically looking at news organizations, and how the views towards immigrants presented by the news anchors affect an individual's opinion about undocumented immigrants in the United States. My research employs a mixed method, using both qualitative and quantitative research, with a survey and an optional interview. I would use the findings from the survey to be able to ask relevant questions to the subjects doing the optional survey. This research will provide valuable insights into how students view undocumented immigrants in the United States and the role that media played in developing these opinions.

Lopez Chilel, Francis

Institution: *MD - Salisbury University*

Discipline: **Biology**

Author/Contributors:
Francis Lopez-Chilel

Abstract Name: **Terrestrial friction-reducing properties of mucus and scale anisotropy in northern snakehead (Channa argus)**

The mucus coating around a fish's body is essential to its survival. It contains antimicrobial properties, aids in drag reduction, and protects against physical damage. It provides a lot of versatility for aquatic fishes in certain environments and is a key adaptation among amphibious fish. The Northern Snakehead (Channa argus) are a species of amphibious fish that is not only invasive to the Chesapeake Bay but is renowned for its unique ability to crawl on land. However, the role of their slippery mucus in terrestrial behaviors is currently unknown. This project aims to investigate how snakehead mucus affects friction during terrestrial locomotion, assess if their mucus evolved to facilitate such movements compared to the mucus of fully-aquatic fish (i.e., Common Carp), and determine how their scales influence friction anisotropy using scale-less fish (i.e., Blue Catfish). This will be tested by pulling on freshly euthanized fish along two types of surfaces in the forward and backward directions using a force meter. Each fish will be tested using the above with its mucus coat intact and then again with it wiped off, allowing for paired comparisons. This will illustrate how mucus and the anisotropic properties of fish scales influence terrestrial friction. The snakehead mucus significantly reduced friction, and did so proportionally more than carp mucus. Additionally, fish scales exhibited frictional anisotropic properties, with less friction in the forward direction and more in the backward direction, similar to how snake scale anisotropy promotes forward movement. Amphibious fishes like snakeheads may have evolved particularly slippery mucus to aid in terrestrial locomotion by reducing friction and energy required to move overland, potentially between bodies of water. This study may also provide insight to the biomechanics of snakeheads, which could inform as well as improve the development of bio-inspired robotics and bio-materials.

Lopez Rosales, Fidencio

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **English/Linguistics**

Author/Contributors:
Fidencio Lopez Rosales

Abstract Name: **Divisions of Aspect and Mood in Mixtec Spoken in Central Wisconsin**

The purpose of this research project is to identify temporal, aspectual and modal markings in a variety of Mixteco, an indigenous language of Oaxaca, Mexico, whose speakers migrated from Oaxaca to Veracruz and subsequently to Central Wisconsin. The result of this study will contribute to ongoing research on aspect, tense and mood (e.g. Timberlake 2007) and to research on the expression of these three categories in other varieties of Mixteco (Bickford; Marlett 1988). I am conducting this project through interviews with relatives who are native speakers of Mixtepec Mixteco, with a focus on eliciting verb paradigms. Following Bickford; Marlett, I expect to discover a primary division of mood into irrealis and realis, and within realis mood, a secondary distinction between perfective and imperfective aspect. Confirming these distinctions, or finding data that challenges Bickford; Marlett's research, will add to our understanding of the tense, aspect and mood system of Mixteco languages. Perhaps, more importantly, though, this research adds to our understanding of the complex and poorly documented relations among varieties of Mixteco. With roughly 530,000 speakers, Mixteco constitutes a dialect continuum in which local varieties are not mutually intelligible with one another. Many speakers of Mixteco live in the mountainous regions of Oaxaca, an underdeveloped area whose poverty has driven significant migration to the United States. Poor documentation of these varieties has made it challenging to identifymigrants' home language andpresents an obstacle to individuals and institutions whose aim is to support new arrivals in the US. Documenting and describing the structure of Mixteco varieties thus lays important groundwork for humanitarian efforts.

Loquercio, Jenna

Institution: *DE - University of Delaware*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jenna Loquercio *Janelle Craig* *Raymond Patt*
Roberta Michnick Golinkoff, Ph. D.

Abstract Name: **The Impact of Surgical Masks on Emotion Perception and Gender Classification**

Mask-wearing has become a common practice due to COVID-19, affecting numerous aspects of social interaction and perhaps affecting children's social development (Chester et al., 2022). Mask-wearing may impact children's perceptions of emotion and their ability to classify another's sex due to the occlusion of faces (Mollahosseini et al., 2016).Before COVID-19, studies demonstrated that children attend to others' eyes and mouths to differentiate between emotions (Mollahosseini et al., 2016). Few studies examine children's ability to differentiate emotions when the lower half of the face is covered; those studies have found conflicting results. In some, masks did not significantly impair children's ability to infer and respond to others' emotions (Ruba; Pollack, 2020; Schneider et al., 2021), whereas others found that toddlers are more greatly affected by masks than adults, and that masks led to a drop in children's performance on emotion perception tasks (Gori et al., 2021; Kim et al., 2022).Wild et al. (2000) studied sex categorization and found that 7-year-olds, for the most part, correctly classify the sex of adults using facial structure alone. Fagot and Leinbach (1993) found that infants as young as 9 months of age can correctly categorize males and females from pictures of their face. We extend this work to mask-wearing contexts, exploring 3- to 6-year-old's ability to classify the sex of masked and unmasked faces.We aim to understand how young children detect masked and unmasked individuals' emotions and sex. Additionally, we will explore which parts of the face facilitate children's emotion and sex categorization. This will be explored by presenting children with images of uncovered faces, faces with sunglasses on (i.e., upper-face occluded), and faces with a surgical mask on (i.e., lower-face occluded). We hypothesize that mask-wearing will significantly affect children's emotion perception and sex classification.

Lor, Wanlee

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication/Journalism

Author/Contributors:
Abbey Joyner

Abstract Name: **The Associations between Belongingness, Trust, and the Willingness to Donate to One?s Alma Mater**

Donations are a vital part of keeping universities up and running across the globe. Thus, it makes sense that universities have a vested interest in fostering relationships with students that will generate future donations. This study examines the degree to which feelings of belongingness, trust, and engagement in campus activities affect an individual's willingness to donate to their alma mater. The 72 participants in this study represent a diverse group of students at the University of Wisconsin-Eau Claire. The findings indicate that feelings of belongingness with the university and the belief that one can trust the university are more strongly associated with a willingness to donate. Engagement in campus activities was not significantly associated with a willingness to donate. Thus, we learned that while it is important for a university to provide opportunities for students to engage in campus life, the university should spend equal time fostering a sense of belongingness and trust with their students.

Loredo, Briana

Institution: *TX - San Jacinto College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Briana Loredo,
Paula Jacobi,
Nancy Turner,
Sarah Sartain

Abstract Name: **Cleavage of Classical Complement Pathway Components by Tissue Kallikrein**

The complement system, a part of the innate immune system, serves as a first-line defense against foreign pathogens in the body, but can lead to disease if overactivated. The complement system is composed of a series of proteins within a cascade that cleave and activate each other, ultimately leading to the lysis of the foreign pathogen. The complement system consists of three different pathways—classical (CP), alternative (AP), and lectin. Previous research by Sartain et al. found a serine protease outside of the complement system, known as tissue kallikrein (KLK1), cleaved components within the AP. KLK1 plays a role in regulating blood pressure and blood flow, and can produce inflammatory effects similar to C3a, a protein found in the complement system. Since KLK1 was able to cleave AP components, this study aimed to determine if KLK1 was capable of cleaving CP components—C2, C4, C1r proenzyme, and C1s proenzyme. CP components—C2, C4, C1r, and C1s—were incubated with KLK1, and analyzed by SDS-PAGE under non-reducing and reducing conditions and western blotted. We found KLK1 cleaved C2, but not C4; and KLK1 cleaved C1s, but in a different location than its native cleavage enzyme (C1r). KLK1 also demonstrated to cleave C1r in a location other than its known cleavage site. Future experiments will examine if KLK1-activated C1s can cleave downstream CP component C4. Taken together, these results provide new insight as to how KLK1, a protease outside of the complement system, is capable of activating the CP, contributing to complement system overactivity often associated with disease.

Lorenzen, Hannah

Institution: *WI - Marquette University*

Discipline: Biology

Author/Contributors:
Hannah Lorenzen

Abstract Name: **Investigating the Role of Increased Germline Apoptosis at High Temperature in Caenorhabditis elegans**

Exposure to environmental stress can decrease an organism's ability to reproduce successfully, especially elevated temperature. What mechanisms organisms use to maintain fertility when under stressful temperatures is not well known. Here we explore the role of apoptosis, programed cell death, in regulating the fertility of the nematode Caenorhabditis elegans at high temperatures. In wild type C. elegans, about 50% of germline cells undergo apoptosis under normal environmental conditions, and under high temperature stressed conditions apoptosis increases. We used a series of mutants that have changes in the level of apoptosis: ced-3 and ced-4 mutants that have no apoptosis in the germline, a ced-1 mutant that has no engulfment of cells undergoing apoptosis, and gla-3 and cpb-3 mutants that have increased apoptosis in the germline, to determine how changing the level of apoptosis affects the quality of embryos made. We measured the number of embryos laid and the embryonic lethality at 20°C, the ideal temperature, and the high stress temperatures of 26°C and 27°C. We found that both mutants that decreased and increased apoptosis resulted in decreased embryo number and higher embryonic lethality. This suggests that the balance of apoptosis levels in the germline of C. elegans is important for maintaining embryo quality at stressful temperatures. Additionally, we investigated the mechanisms that may lead to increased apoptosis at high temperature, using the loss of function mutants that interrupt the synapsis checkpoint or the DNA damage checkpoint. We measured the number of apoptotic nucleic at normal and increased temperature in these mutants and found that the synapsis checkpoint but not the DNA damage checkpoint plays a significant role in the increase in germline apoptosis at elevated temperatures. This data together suggests that increased apoptosis occurs in response to increased asynapsis, which ensures resources are not wasted on unfit embryos.

Losordo, Riley

Institution: *MA - Bridgewater State University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Riley Losordo

Abstract Name: **The Role of Ideology, Culture, and Identity During the Anglo-Irish Conflict**

On December 6th, 1921, the Anglo-Irish Treaty was signed, thus culminating a centuries-long battle for Irish independence. This treaty was the product of a long road of discourse, debate, and disagreement amongst both English and Irish alike. The corresponding question is: how did identity, ideology, and culture influence all sides of the Irish Question, on both the macro, and micro levels, as it applied to Home Rule, independence, and the establishment of the Act of Union in 1800? The goal is to analyze the ideologies of unionism and pro-independence movements in Ireland and England, including an examination of religious and national identity. This research utilizes primary sources such as the writings and words of prominent figures in support and in contention with Empire.Examples include debates from Hansard's report on Parliamentary debates as it relates to home rule, such as the speeches of Edward Carson, a prominent Irish pro-empire activist. Another example involves the rhetoric and actions of former Prime Minister William Ewart Gladstone, as well as the writings of John Stuart Mill. These sources will allow me to interpret the shifts over time in ideological thought from the late eighteenth century to the early twentieth century as it relates to culture, identity, and empire by examining perspectives revealed in electoral results, letters, oral histories, and in other discourses.In tracing the evolution of fruitful rhetoric over the course of the Home Rule movement, and taking careful consideration of nuanced public opinion, this presentation will offer a considerable contribution to the history of the Anglo-Irish conflict. By better understanding the proposed outcomes from all sides of the conflict, we can learn to approach history in a more humanistic context.

Loucks, Emma

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Emma Loucks *Sean Babasin* *Jordan Deau,*
Beth Kondro *Michael Holly*

Abstract Name: **Low Cost Filter Media for the Removal of Phosphorus in Agricultural Runoff Treatment Systems (ARTS)**

Seasonal hypoxia of lakes in the Midwest, Gulf of Mexico, and surface waters around the world as a result of excessive algal production, has a detrimental effect on the local aquatic species, environment, and recreation. Despite investments in point source reductions, seasonal hypoxia is persistent, in part due to non-point agricultural sources of phosphorus (P) (35% of total P load to Lake Michigan). Agricultural runoff treatment systems (ARTS), consisting of sedimentation basins and phosphorus removal structures, are an effective field treatment to reduce nutrient pollution .pollution. Numerous media (>80) for phosphorus removal structures have been investigated for their P removal potential and the hydraulic conductivity; Ca, Fe, Mg and Al content of media are important factors. Reactive media derived from waste products would create a product from waste, extending time prior to disposal, supporting a circular economy. Waste residuals (e.g. drinking water treatment residuals, wood waste, vegetative waste) will be modified (through metal additions, heat treatment, pelletizing, and binder addition) for and evaluated for dissolved P removal from agricultural runoff.. Treatment potential of modified waste media will be measured using flow through lab scale reactors constructed out of 0.75-inch diameter PVC pipe. Columns will be completed in triplicate for each media. Influent and effluent samples will be collected every 5 to 10 hours until effluent P is >50% of influent P. Ortho-phosphorus will be measured in collected samples using a discrete analyzer (Seal AQ300) at UWGB. Media will be designed to maximize P sorption capacity, hydraulic conductivity, mechanical strength, efficacy in high flow systems (< 10 min retention times), and reuse potential; minimize toxic side effects, energy consumption, and cost, critical to adoption. Results from flow through analysis will guide selection of reactive media deployed for field evaluation.

Lough, Elysabeth

Institution: ***WI - Northland College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Elysabeth Lough *Ashley Lopez* *Alexandria Espinoza*
Danielle Sneyd

Abstract Name: The Influence of Prior Exposure to Weapons on the Weapon Focus Effect

The proposed study aims to further investigate if ownership of firearms decreases the weapon focus effect (WFE). When a weapon is present during the commission of a crime a witness is less likely to accurately remember details, specifically peripheral details, about the perpetrator's appearance compared to when no weapon is present. It is hypothesized that having prior experience with weapons, through ownership, decreases the WFE compared to no prior experience with weapons.The proposed study will be a 2(Gun Familiarity: gun ownership vs. no ownership) x 2(Weapon Presence: present vs. absent) between subject's design. Participants will come to a lab in groups of 1-10. After receiving and signing an informed consent, participants will watch one of the two mock crime videos that are approximately 42 seconds in length. Both videos depict a mock robbery in the woods where a young woman carrying a backpack is approached by a man who robs her. The robber either only uses his words while holding a backpack to demand her belongings (weapon absent condition) or holds a rifle to demand her belongings (weapon present condition). After watching the mock crime, participants complete filler activities for 20 minutes. Then, participants complete a survey about what they remember about the perpetrators' appearance, select from a 6-person target-present line-up, rate their confidence for the selection, and complete demographic information. Students will be thanked for participating and community members will receive $10.00.The accuracy of participants descriptions will be calculated (total correct details/(total correct + incorrect details)).A series of 2X2 factorial ANOVAs will be used to see if Weapon Presence and Gun Familiarity affected the accuracy, the number of correct details, and the number of incorrect details reported. We expect that those who own firearms will have higher accuracy compared to those who do not own

Love, Rhys

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cody Mrowicki *Allen Kaplan* *Evan Schepp*
Rhys Love

Abstract Name: The Mesoscale Conditions that Contributed to the development of the Morton, Texas Tornado on 23 May 2022

On 23 May 2022, the participants of UW-Whitewater's Field Course on the Forecasting and Verification of Extreme Weather witnessed a tornado in west Texas. The official tornado report had tornadogenesis occurring at approximately 0007 UTC 24 May 2022 (7:07 pm CST 23 May 2022). Based on synoptic-scale (i.e., large scale) conditions most of west Texas from the US-Mexico border into the Texas panhandle were under the threat of severe weather on this day. While in the field and in the post-mortem analysis of this day it was determined the mesoscale conditions were the main factor as to why a significant tornado occurred in the west Texas region near Morton. Mesoscale conditions were evident during the course's morning weather briefing using various mesoscale forecast models. As the day progressed and conditions changed slightly, adjustments were made by the course participants that allowed them to witness the development of the thunderstorm that would end up producing a dust storm (with straight-line wind gust up to 80 mph) and large hail (1.5 – 2.5 inches in diameter). In the post-mortem analysis, a detailed analysis of the mesoscale conditions was performed with additional data from mesoscale networks around the west Texas region. This post-event analysis did find that a localized area of enhanced shear formed near the Morton area due to a surge of dry air out of eastern New Mexico. Preliminary results show that this surge of dry air interacted with an outflow boundary from the earlier developing thunderstorms. The interaction of these differing boundaries created a small area of enhanced lift and wind shear that allowed one of the on-going thunderstorms to intensify and produce an EF2 tornado that occurred 7 miles north of Morton, which the course participants witnessed.

Lovelace, Claire

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Claire Lovelace

Abstract Name: **Mapping Historic Properties and Landmarks in Eau Claire with ArcGIS StoryMaps**

Through this project, we aim to work closely with the City of Eau Claire to create enhanced and interactive GIS maps of local and national landmark designations in the City. Currently, there is a lack of digitally available resources on the City's historic preservation efforts. Creating these enhanced maps will now provide more access to individuals that has not been executed yet. These maps would help property owners understand the history and value of their property. Many of these property owners do not have important documentation on the history of their property that could be useful to them for future decision-making and/or overall knowledge of their property. Being well informed reduces the pitfalls that owners may face when making improvements without first contacting the City to see what is allowed.

Lowe, Sidney

Institution: *NC - Elon University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Sidney Lowe,
Lauren Hill,
Rane Parr,
Seth Wolter,
Bruce Vagt

Abstract Name: **Floating Wetlands Garden for Bioretention Basin**

This research aims to enhance water quality in a bioretention basin by adding an additional layer of aquatic plants in the form of artificial floating wetlands. The water basin mimics natural aquatic systems that provide a variety of ecological services including flood abatement, nutrient uptake, and sediment removal in retained waters. This mitigates pollutant entry into adjacent aquatic systems. An additional ecological service this project explores is the ability to plant species that can produce edible vegetation, in contrast to current research that focuses on nonedible wetland plants. A set of 5 different cool weather and warm weather tolerant plant species suitable to North Carolina climate will be analyzed for germination, growth rates, and metal uptake. Plants will be grown in an indoor hydroponics system to mimic the outdoor bioretention basin growing conditions before being tested outdoors. It is essential to examine the growth of vegetation in polluted wetlands to determine which species will grow the best in excessive levels of nitrogen and phosphorous. Growth will be determined by recording root length and overall plant height, as well as the quality of the produce. Further chemical analysis of metal uptake will provide information on the safety of plant consumption. This would take the impact of the hydroponic system from simply runoff nutrient removal from the environment to the addition production of produce.

Lozada, Benvin

Institution: *UT - University of Utah*

Discipline: Economics

Author/Contributors:
Benvin Lozada

Abstract Name: **The Effect of School Funding Disparities on Economic Inequality**

Since the 1980s, the United States has experienced increased income inequality, which has fueled a variety of social, economic, and political concerns regarding the state of the American Dream and the true nature of opportunities available throughout the country. One major contributor to the ability of impoverished peoples to climb up the socioeconomic ladder has been the attainability of education; however, common barriers to quality education exist in our society that have prevented the classroom from reaching its full potential as an enabler of equity. These barriers to quality education are the focus of this research project, which aims to study the effect of disparities in school district funding on economic inequality.In order to study this, an instrumental variable method approach is used (to allow for causal inference in non-controlled experiments) with a variety of data sources from federal agencies like the U.S. Departments of Commerce and Education and research labs such as Opportunity Insights at Harvard University, and other data sources in order to provide an empirical analysis component to the project. This is combined with models in machine learning to model the aforementioned relationship in a more accurate fashion than the linear regressions that are typically utilized with instrumental variables.From an initial analysis, we expect a statistically significant relationship between certain school funding policies (and the corrosponding funding disparities) and the rates of economic mobility in their corresponding communities. While preliminary, these observations will provide groundwork for further study in this burgeoning area, and will allow for us to make detailed policy recommendations in the future in order to help remedy this source of inequality.

Luberto, Emily

Institution: *AZ - Northern Arizona University*

Discipline: Biology

Author/Contributors:
Alexanda Gibson *Jessica Guzzo* *Emily Luberto*
Meagan Owens *Katrina Urrea* *Megan Wilkinson*
Karen Haubensak

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After threemonths of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Luckett, Danyelle

Institution: ***IL - Trinity Christian College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Madison Eggert *Danyelle Luckett*

Abstract Name: Pride Versus Prejudice: A study on the approach to race and sexuality by faith affiliated counselors and counselors in training

Despite training inmulticultural counseling, counselors demonstrate a gap in integrating what they have learned into clinical practice (Owen et al., 2011; Rutherford et al., 2012). The purpose of this mixed methods study is to examine the responses of religiously affiliated counselors torace and sexuality. Thirty-five participants completed the following scales measuring religious affiliation and multicultural competency: Quest scale (Baston; Schoenrade, 1991), I/E-R Scale (Gorsuch; McPherson, 1989), Revised Religious Orientation Scale (Gorsuch; McPherson, 1989), Multidimensional Cultural Humility Scale (Gonzalez et al., 2021) and The Lesbian, Gay, Bisexual, and Transgender Developemnt of Clinical Skills Scale (Bidell, 2017). Participants answered open ended questions addressing theirbeliefs and clinical training. Themes emerged wherein participants described issues of race and sexuality within their training; some demonstrated prejudice while others demonstrated open-mindedness, both groups used faith to justify their ideas. We found significant positive correlations between counselors' self-assessed competency in their LGBTQ+ clinical skills and quest orientation (N=35, r=0.348, 0.05), self-awareness and fundamentalism (N=29, r=0.416 0.05), as well as significant negative correlations between extrinsic religiosity and supportive interactions (N=35, r=-0.336, 0.05), and intrinsic religiosity and LGBTQ+ clinical skills (N=35, r=-0.418, 0.05). This suggests that quest oriented participants, who allow themselves to wrestle with their religion,had higher self-assessed competencein providing care to the LGBTQ+ community as opposed to those who are more traditionally religious.Dataalso suggests that those who have rigid religious beliefs had more self-awareness. Overall the data suggest that a counselor's faith influences their ability to work with issues of race and sexuality. By having a clearer understanding of the relationship between religiosity and multicultural competency, counselor training can foster integration of multicultural principles in counselor practice.

Luckhaupt, Brayden

Institution: ***IL - Quincy University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Brayden Luckhaupt,
Rees Treaster,
Malik Hardmon

Abstract Name: Enhancing Healthcare with Real-Time Body Gesture Recognition: The DroneX Solution

Due to the increasing popularity of drones in mainstream entertainment and business sectors and the limitation of controllers, we realized the need for hands-free control and expansion of user-defined commands that hardwired controllers cannot support for drones. This project uses the DJI Tello drone to recognize different commands through body gestures. The DroneX should distinguish between a series of body gestures and return the desired commands to the Drone. We have implemented the MediaPipe tool by using its APIs to currently recognize eight gestures; stop, take/up, land, forward, backward, left, right, and flip. We also used OpenCV and its APIs to display the image on a separate device. The DJI Tello drone is used as the environment for deploying the DroneX software. The Tello is connected to a separate device via Wi-Fi limited to 100 meters. It has a camera that is 5 megapixels (2592 x 1936), has an 82.6-degree field of view, and is HD 720 p. We are aware that DJI RyzeTM has a drone called the DJI Spark that uses hand gestures to issue commands. We are using body gestures to have a better range than hand recognition. Social media platform Snapchat also had a drone called Pixy that would take a selfie of the user, but Snapchat discontinued the efforts to develop it in August 2022. Pixy would just take a picture and return it to the user's hand. Currently, the DroneX project has some limitations, such as working in low-light flight conditions, harsh environment flight, and in an area of multiple detected objects. In future work, we plan to overcome the mentioned limitations, detect gestures at big distances, and include larger body gestures in our dataset.

Luke, Tyler

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Tyler Luke,
Jesse Poltrock,
Jonathan Frisch

Abstract Name: **Oxidative Reactivity of Biomimetic Nonheme Diiron(III)-Peroxide Compounds**

Diiron(II) compounds of the anion of the dinucleating ligand N-EtHPTB (N, N, N′, N′-tetrakis(2-benzimidazolylmethyl)-2-hydroxy-1,3-diaminopropane) and the bridging anion (O2X) of either HO2PPh2, HO2PMe2, or HO2AsMe2 were synthesized. Upon reaction with O2 in MeCN at -40° C, these compounds form metastable O2 adducts previously described as (mu-eta1:eta1-peroxo)diiron(III) complexes with 1,3-O2X bridges. When warmed to -30° C, the O2PPh2-bridged peroxo complex irreversibly converts to a peroxo complex with the O2PPh2 moiety in a terminal position on one iron. The same effect can be produced by adding OPPh3 to the O2PMe2-bridged complex. The oxidative capabilities of these different peroxo species are compared with each other by reaction with various substrates. The effects of bridging O2X versus non-bridging O2X ligands are discussed, as well as the effects of electronic differences in the O2X ligands and the effects of coordinated OPPh3.

Lukina, Oleksandra

Institution: *SD - University of South Dakota*

Discipline: **Physics/Astronomy**

Author/Contributors:
Oleksandra Lukina,
Ruslan Podviianiuk,
Joel Sander

Abstract Name: **Development of a Cable Checkout Board for the SuperCDMS Experiment**

Dark matter is an invisible form of matter that is inferred from its gravitational effects on visible objects to account for 85% of the matter in the universe. One of the leading hypotheses of the nature of dark matter is that it is composed of weakly interacting massive particles (WIMPs). The Super Cryogenic Dark Matter Search (SuperCDMS) experiment is designed to search for WIMPs that elastically scatter off of nuclei. We present the results of a research and development project to check SuperCDMS readout cables for possible defects before deployment.Readout cables enable communication between the cryogenic detectors and the warm electronic system that controls, monitors and processes signals. SuperCDMS utilizes approximately 30 pairs of readout cables connected together, each of which consists of 100 wires. A specialized cable checkout device will identify circuit shorts and breaks in a time-efficient manner before their deployment in a cryostat where a defect could impact the acquired data. This presentation describes the different stages of the research and development process, including background research of electronics used in the experiment, printed circuit board design and manufacturing, hardware testing and software development.

Lundgren, Carl

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kai Olson *Carl Lundgren* *Elizabeth Glogowski*

Abstract Name: **Synthesis and miscibility characterization of stimuli-responsive polymers for applications in architectural coatings**

Polymers are long repeating chains of atoms or molecules with applications as additives in a wide variety of products. Stimuli-responsive polymers change their properties when exposed to different environmental conditions such as temperature, pH level, and salt concentration. Controlling polymer structure through precise synthesis techniques directly determines the stimuli-responsive properties of these polymers. Stimuli-responsive polymers can be used as dispersants for titanium dioxide particles (TiO2) within architectural coatings, such as paints, primers, and stains. Titanium dioxide is an opacifier in architectural coatings, blocking light from passing through. By controlling the polymer environment, the stimuli-responsive polymers can improve the dispersion of titanium dioxide, lowering the amount of titanium dioxide needed in the coating while increasing the opacity of the coating. Lower amounts of TiO2 lowers cost for consumers as well as environmental impact from titanium mining and processing. Synthesis of diblock and triblock copolymers with controlled copolymer composition and stimuli-responsive properties using activators regenerated by electron transfer atom transfer radical polymerization has yielded smart polymers with observable switchable miscibility properties. Characterization methods of the properties of these polymers includes nuclear magnetic resonance spectroscopy, gel permeation chromatography, and pendant drop tensiometry. Nuclear magnetic resonance spectroscopy provides evidence of synthesis success and yield proportions by indicating which functional groups are present and whether stimuli-responsive structures have been synthesized. Gel permeation chromatography allows us to identify the polymer molecular weight and weight distribution, in order to predict the smart properties of each polymer. Pendant drop tensiometry provides data on interfacial tension at several temperatures, pH levels, and concentrations, to predict how the polymer will behave as dispersants for TiO2 in different architectural coating environments. Determining how stimuli-responsive structures and properties are related by polymer synthesis is essential to optimize materials for the dispersion of titanium dioxide in architectural coatings.

Lundquist, Cody

Institution: *MN - University of Minnesota - Duluth*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sahi Chundu

Abstract Name: **MenomiNet: A Prototype Network for Real-Time Public Lake Data**

Currently, there is a high cost and low frequency of data collection on the Red Cedar watershed in the Midwestern United States. The existing processes involved with eutrophic lake monitoring put volunteer health at risk. Nevertheless, the regular collection of eutrophic lake data is important because it can identify which rural, suburban, and urban areas are at risk of having excess levels of nitrogen and phosphorus in their water supply. Moreover, in the Red Cedar watershed, there is a severe backlog in data collection of multiple ecological metrics. We developed the research question, what is an efficient and cost-effective way to gather lake health data in real-time? Using a submersible sensor suite, our team gathered four different kinds of lake health metrics: temperature, dissolved oxygen, turbidity, and pH. This data was broadcast through a LoRA (long-range) transmitter network at distances of approximately 500 feet between transmitter and receiver. After obtaining a running log under several physical and weather conditions, including during interactions with waterfowl, as well as under multiple time frames, ranging from multi-hour stretches in the day to overnight/multi-day readings, we stored the data into log files that capture the limnological data over time. We also began developing a web dashboard to publish this data in a readable format. Our low-cost LoRA approach uses components that cost less than $1000 per node and drastically reducethe cost of lake health monitoring relative to current state-of-the-art approaches. This may empower not only academics or students but also groups of citizens, lake associations, and lake districts throughout the Red Cedar watershed to allocate funds and resources towards local monitoring projects. This level of coordinated effort would provide continuous, distributed lake health data for the first time in the watershed's history.

Lunt, Samantha

Institution: *NY - Siena College*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Samantha Lunt

Abstract Name: Engagement and Retention of Volunteers

Volunteers are an integral part of any nonprofit organization. It is essential to have volunteers engaged and committed to their work at an organization because this will increase volunteer retention (Faletehan et al., 2021). Engaging and retaining volunteers can be challenging in an environment where volunteers change every few months, and each nonprofit presents unique site-specific challenges. When people feel connected to an organization and community, their engagement with service increases (Hellman et al., 2006). The process used to onboard volunteers is integral to creating healthy, sustainable relationships (Rafe, 2013; Faletehan et al., 2021).The purpose of this research is to examine strategies for engaging and retaining volunteers in Nonprofit businesses in general, explore the specific roles, goals, and sense of purpose of the volunteers at a youth-based community center in the New York Capital Region, and create a targeted center-specific training for their volunteers and administrators. The study sample consists of college student volunteers for the after-school program at the center. The questions were created from the literature on engagement and retention to investigate the volunteer mindset (Burns et al., 2006; Rafe, 2013).The focus groups will provide insight into specific volunteer experiences, knowledge, and effective volunteer strategies. It will allow us to learn what volunteers want to accomplish while volunteering and discover what would encourage them to continue. Utilizing the focus group data combined with a review of the current research in the field, I will provide the center with strategies for engagement and retention, a training for the volunteers, and a structure for the volunteers that will facilitate retention. Gaining a greater understanding of how to effectively engage and retain volunteers is essential, and learning from the volunteers themselves will help prepare future volunteers and retain current volunteers (Hellman et al., 2006).

Lupenski, Hannah

Institution: *FL - University of West Florida*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Hannah Lupenski

Abstract Name: A Comprehensive Survey to Address the Implementation of a Campus Wide Composting Program

University Composting plans have been shown to bevery beneficial for the local environment and help to lower waste and conserve water usage for community gardens on campus. The implementation of a campus composting program can help to lower greenhouse gas emissions as well as provide local gardens with nutritious compost for their soils and an educational medium for individuals to learn sustainable practices. The intention of this research was to identify the best strategies to use to implement a successful and effective campus wide composting program for the University of West Florida's Pensacola campus. In order to determine the most appropriate way to build a comprehensive and efficient composting program, a survey was used to assess the understanding, preferences and intentions of individuals on campus related to composting. Students, faculty, and staff were evaluated on their overall understanding of composting in general, awareness of the positive impacts of community composting, their willingness to participate in the program and educational workshops, and their overall motivation for a campus composting program. The survey was also used to determine whether a quick composting tutorial would influence participants willingness to participate in the campus wide program. The survey results were used to create a detailed plan of implementation, along with a proposal of funding for specific equipment and maintenance needed to run the program. This research aims to raise interest and involvement in sustainable practices on campus, to provide students with future opportunities for research and sustainable action locally and to help launch the campus composting program.

Luzinski, Cora

Institution: *WI - University of Wisconsin-Madison*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Cora Luzinski,
James Finn IV,
Briana Burton

Abstract Name: **Using Gene Knock-Outs to Study WXG/LXG Operon Expression**

Every bacterial cell contains protein secretion systems which are essential to their propagation and survival. The Type VII secretion system (T7SS) is required for virulence in some Gram-positive bacteria. Proteins secreted by the T7SS include the WXG100 family of proteins and the deadly LXG toxins that will terminate nonkin cells without the cognate anti-toxin. Bacillus subtilis encodes its T7SS and primary substrate on a single operon, the yuk operon. Additional substrates are encoded on other WXG/LXG operons. Recently, competition assays demonstrated that using attacker strains with the T7SS knocked-out allowed the prey to survive. This showed that the LXG toxins are substrates of the T7SS. Little is known about these proteins; one outstanding question is about when the bacterium is using these toxins to enact their effect. To answer this, we will directly test the expression of WXG/LXG operons in various environmental and cellular conditions using transcriptional fusions of each WXG/LXG operon promoter with a GFP reporter. Further, we will combine these reporters with knock-outs of key regulators, such as degU or spo0A, which have shown positive or negative regulation on the yuk operon. Expression of the reporters will be determined by measuring the GFP emissions from cell culture in a plate reader and by fluorescence microscopy. Results from these expression studies will reveal regulation profiles of each of the WXG/LXG operons. This data will directly inform on the conditions in which the bacteria may be using these LXG toxins.

Lycans, Steven "SJ"

Institution: *KY - University of Kentucky*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Steven "SJ" Lycans,
Daniel Dailey

Abstract Name: **Enabling a clean-energy economy from U.S. rare earth resources: characterization of low-grade allanite-based ore from Halleck Creek, Wyoming**

Rare earth elements (REEs) have significant value to technologies critical for energy infrastructure and independence, decarbonization efforts, and defense applications. REE supply is heavily constrained to deposits outside of the U.S., making economic and sustainable REE and other critical material recovery from low-grade source materialsparamount to U.S. national security.The goal of this research is tocollect, pulverize, and analytically characterize unutilized REE-containing allanite ores from primary deposits in Halleck Creek, Wyoming to define major mineralogical and elemental compositions.Halleck Creek core (130-kg) and surface (33-kg) samples were crushed to a top size of 4-mm through primary and secondary reduction processes. Mineralogical and total metal analyses were performed on screened size fractions and representative core and surface samples via X-ray diffraction spectroscopy (XRD), X-ray fluorescence spectroscopy (XRF), and inductively coupled plasma optical emission spectrometry (ICP-OES). A mineral liberation study was conducted via scanning electron microscopy with energy dispersive X-ray analysis (SEM-EDAX) to identify allanite and other REE-containing particles in the host rock. Grindability was investigated through standard rod mill laboratory tests to determine optimal conditions to generate 150- and 500-µm 80% passing size (P80) sample lots. The results of this research will identify what and where the value (i.e., REEs, critical materials) is in this uncharacterized allanite ore along with any intrinsic processing constraints.This comprehensive ore analysis will inform activities related to: REE beneficiation from the allanite-ore feedstock and outlining a REE biomining and purification workflow. Ultimately, this research will enable the development and demonstration of a modular, biobased REE biohydrometallurgy process through theDefense Advanced Research Projects Agency (DARPA) funded project titled Synthetic Biology for Biomining of Rare Earth Elements (SynBREE).

Lydon, Declan

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Political Science**

Author/Contributors:
Carrie Anderson,
Miranda Boettcher,
Declan Lydon,
Lance Basting

Abstract Name: **The Effect of Gerrymandering in the State of Wisconsin as it Pertains to Voter Turnout, the Number of Candidates Running for Office, Contested Districts, and Margin of Victory in Elections**

In 2011 leaders from the Republican party in Wisconsin redrew the voting maps for the state. Their efforts resulted in a heavily gerrymandered map favoring the Republican party, which virtually assured Republican control of state level legislative politics for the foreseeable future. The issue of gerrymandered maps has been litigated at several levels including a hearing by the United States Supreme Court which issued a ruling in June 2019. The Court asserted that drawing voting maps lies within the realm of the state legislatures, and it is not the role of the federal courts to dictate rules and regulation pertaining to state voting maps. This ruling effectively quashed the most likely avenue for voters in Wisconsin to have fair voting maps.The question this correlational research seeks to answer is whether gerrymandering has had a significant cooling effect on voter turnout, the number of candidates running for state senate and assembly and the number of contested districts in the state. Additionally, researchers are interested in whether gerrymandering has resulted in a significant change in the margin of victory for either political party in gerrymandered districts. These variables will be examined by comparing pre and post gerrymandered elections in the state of Wisconsin.Researchers hypothesize gerrymandering has resulted in a significant decrease of voter turnout by district, a decrease in the number of candidates running for state legislative offices, a decrease in the number of contested districts in the state and an increase in the margin of victory in the districts that have been most heavily gerrymandered.

Lynch, Patrick

Institution: *MA - Bridgewater State University*

Discipline: **Music**

Author/Contributors:
Patrick Lynch

Abstract Name: **Classically Blue: Jazz Music Manifest in Classical Pieces for the Piano**

The goal of this project was to analyze jazz-influenced classical pieces for the piano to gain inspiration for an original composition. To begin, I conducted a survey of academic writing to define the intersection between jazz and classical music and listened to many composers and pieces to pick repertoire to study. Through this process, I honed in on three composers that fit my style and criteria: Nikolai Kapustin, George Gershwin, and Maurice Ravel. In the following weeks, I practiced and analyzed their pieces such as Kapustin's Eight Concert Etudes, Op.40 and Variations, Op.41,Gershwin'sThree Preludes,and Ravel'sLe tombeau de Couperin, M.68. I noted in their works the integrationof jazz harmony into classical forms using techniques such as extended chords, rootless voicings, and blue notes, the use of jazz rhythms such as successive syncopations and swing sections, and a variety of pianistic textures and counterpoint. Then, I began my composition using what I learned. The piece is named Blueberry Islandand is thematically set on Lake Pemigewasset in New Hampshire during the Fourth of July. The opening theme is written using the classical technique, canon, meant to literally portray the children on the lake shore chasing after one another in the summer sun. On the second occurance of the theme, the left hand responds with a countermelody which symbolizesthe White Mountains watching over the lake. A quick three measure transition is very Gershwin-esque, transitioning the story to nighttime. The middle section is in a slower triple meter as the chords become a little bigger, incorporating jazzy extensions, telling the love story on the lake. At last, the A theme returns harmonized with left-hand syncopation inspired by Kapustin's etudes as friends and familydance under the fireworks.

Lytle, Katie

Institution: *NE - University of Nebraska at Kearney*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Mackinzi Hill,
Katie Lytle

Abstract Name: **Serotonin N-acetyltransferase Inhibitors for Treating Circadian Rhythm Disorders**

Circadian rhythm (CR) dysregulation contributes to mental health disorders, including major depressive disorder (MDD), bipolar disorder (BD), and seasonal affective disorder (SAD). Melatonin has been strongly associated with CR, but despite years of research, many questions remain regarding its role and how it influences mood. The rate-limiting step in melatonin synthesis involves the enzyme serotonin-N-acetyltransferase (SNAT, AANAT). Inhibition of SNAT would be a valuable approach for studying the physiology of melatonin and could be used to treat disorders such as SAD that involve abnormally high melatonin. Published inhibitors have problems with cell permeability, selectivity, and/or potency, which have prevented advancement to testing in humans. We have applied X-ray crystal-based models to modify a previously described indolinone scaffold with polar substituents as well as aromatic rings for conformational restriction to improve interactions with the Coenzyme A (CoA) binding site of SNAT. The synthesis and structure-activity relationship (SAR) from an enzymatic assay of these new indolinone-containing inhibitors will be presented. Our results could lead to a better understanding of SNAT's function and provide an approach to regulating melatonin.

Lyytinen, Savannah

Institution: *MN - Hamline University*

Discipline: **Public Health**

Author/Contributors:
Emma Moe *Taylor Lander* *Sam Thompson*
Savannah Lyytinen *Serena King* *Laura Palombi*

Abstract Name: **Community Engaged Partnerships With Southeast Asian Community Health Liaisons, Leaders, and Health Care Professionals: A Pilot Project on Opiate Awareness, Overdose and Psychoeducation**

Opiate addiction and overdose is a major public health concern that disproportionately affects minority communities, yet little is known about the impact in Southeast Asian communities.1) Pilot a sustainable program of opiate awareness, pharmaceutical awareness, and education in Southeast Asian (SEA) communities. 2) Assess community needs around opiate education, prevention, and medical care for opiate addiction, and 3) Engage professionals (stakeholders) on SE Asian community needs.A three-part model included: 1) A train-the-trainer psychoeducational program delivered by community health liaisons (CHLs), 2) Stakeholder engagement around SEA opiate prevention, overdose prevention/reversal, and care (medical, mental health, pharmacy, and Narcan distribution professionals) and 3) Guided conversations with community leaders. Training sessions were delivered virtually, whereas community sessions varied in their delivery methods (verbally in a community's native language). Three community health liaison training sessions involved a train-the-trainer psychoeducational model on the nature of opiates, drug effects, pharmacist-patient communication, stigma, and community comfort in discussing opiates. A pharmacy professor delivered five two-hour training sessions for the CHLs. We held stakeholder conversations with pharmacy students, physicians, addiction counselors, and clinic supervisors. Common barriers identified were funding and availability of translators, stigma, transportation, and community awareness of resources available. Significant needs exist in SEA communities. First, we observed a lack of knowledge and awareness around opiates across communities. Program materials delivered in a narrative format were useful (per leader feedback). Several leaders and community members expressed concern about the community proliferation of online purchases of drugs marketed as painkillers. Third, community members may lack awareness of risks around opiates and addictive potential. Cultural factors and stigma prevent community members from seeking information and treatment, and there is a need for Narcan education and linguistically and culturally competent providers.

M Doseck, Makena

Institution: *OH - University of Findlay*

Discipline: English/Linguistics

Author/Contributors:
Makena Doseck

Abstract Name: **MENtal Suppression: Toxic Masculinity's Impact on Men's Mental Health and Trauma from a Woman's Perspective**

According to Tina Maschi, “Male youths are overwhelmingly the victims of nonsexual crimes, such as homicide, aggravated assault, simple assault, robbery, larceny, and vandalism,” (Maschi, 2006). Many of these young boys are also victims of toxic masculinity, the “harmful social norms about how men should behave that lead to misogyny, homophobia, violence, and mental health issues” (Fisher, 2019). These norms have become ingrained into the traditional male psyche. A common societal expectation for men is for them to hide their emotions and “be a man”; however, this only pushes this large demographic of individuals away from forms of therapy, such as poetry therapy, proven to help “enable the person to facilitate his or her own understanding of feelings and lifestyle” (Lerner, 1991).There is much scholarship on the subjects of men’s health, the impacts of toxic masculinity, and poetry therapy individually. However, the connection between the categories has been significantly overlooked in academia. The goal of “MENtal Suppression,” my slam poem used as a call-to-action regarding men’s mental health, is to acknowledge these concepts in a cohesive setting to ultimately show how toxic masculinity restricts their freedom to write creatively without judgment. This restriction ultimately prevents men who have suffered trauma from utilizing poetry therapy in their healing process.“MENtal Suppression” uses the ethos methodology presented within Tupac’s “Keep Ya Head Up” (1992), reversing the original message of encouragement and solidary from a man towards women to a woman’s support for men regarding their mental health. In doing so, the poem presents the urgent need to reform the view and expectations of men within society.

M Fowler, Abigail

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Abigail Fowler *Bridget McGovern* *Isabelle Lein*
Rachel Currant *Melda Büyüköz* *Metin Uz*
Donald Sakaguchi

Abstract Name: **Development of nerve replacement method using a gelatin scaffold platform for the three-dimensional culture of neural stem cells.**

Three-dimensional (3D) biopolymer scaffolds, such as those made of gelatin, offer a culture system that could create a better environment for stem cell proliferation and growth by providing a more physiologically relevant microenvironment. 3D biopolymer scaffolds also offer the potential for cells to be initially cultured in vitro and then placed within the human body, creating a platform for new tissue to grow. Adult rat hippocampal progenitor cells (AHPCs) can differentiate into neurons, glial cells, and astrocytes in vitro. When paired, AHPCs and 3D gelatin scaffolds could offer a potential therapy to replace lost nerve tissue by creating a bridge between severed nerves. Initial experiments developed cell culture protocols for AHPCs within several different configurations of 3D porous gelatin scaffolds. We demonstrated the growth and viability of AHPCs utilizing fluorescent microscopy and propidium iodide assays. We have also demonstrated that these scaffolds support cell proliferation and differentiation through immunocytochemistry. We have also identified occurrences of colocalized staining of RIP (oligodendrocyte marker) and Ki67 (proliferation marker) which implies the presence of oligodendrocyte precursor cells. Further characterization of AHPCs into neurons, glial cells, and oligodendrocytes is currently being conducted to understand differentiation. This work has the potential to advance peripheral nerve tissue engineering.

M Kassim, youser

Institution: *OK - University of Central Oklahoma*

Discipline: Architectural and Interior Design

Author/Contributors:
youser m kassim

Abstract Name: The Crime of Rebuilding Babylon

The land of Babylon lies upon the ruling of the most notorious and brutal dictators of all time. Since committed as the ruler of the Republic of Iraq, Saddam has made his mission to hoard every means necessary to secure his position as leader. One of the things that he utterly destroyed was his land. He poisoned the soil that stood beneath the hanging gardens of Babylon. All of that rich history was fractured by the touch of Saddam Hussein. The rich history of Babylon was tarnished by a narcissistic dictator that lay upon Babylon's soil for 30 years. That dictator is known as Saddam Hussein. Iraq is currently known as the poisonous field of broken buildings due to war. The authentic Iraqi tradition is wealthy with the architecture and history of Babylonian, Sumerian, and Assyrian remains. Sadly most of what Iraq is known for now is 30 years of poverty led by Saddam Hussein. Saddam Hussein Abd al-Majid al-Tikriti was a brilliant and educated politician who exceeded in diplomacy and authenticity to people. Hussein demanded that most of his palaces mimic artificial royalty by demolishing the grounds of Babylon and rebuilding a palace that suited his position. The rebuilding of Babylon by Saddam Hussein is a naturalistic, narcissistic, and a crime to all historical architecture. The 30-year dictator fulfilled his infatuation with other ancient civilizations by walking through a time capsule of cultures that dominated power and architectural impact. His fixation with other ancient civilizations fulfilled his need for power. Without Hussein's desperate need to fulfill his ego, there wouldn't be a narcissistic design in architecture.

Ma, Tianhao

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Tianhao Ma *Paul Scott* *Jonna Morris*

Abstract Name: Associations of Obstructive Sleep Apnea (OSA) Severity and Excessive Daytime Sleepiness, Insomnia, and Fatigue in Women

Introduction/Background: The apnea-hypopnea index (AHI) is the measure of OSA severity. Categories of OSA severity, established primarily in men with OSA, are Mild: 5<=AHI<15; Moderate: 15<=AHI<30; and Severe: AHI ≥ 30. It is well established that excessive daytime sleepiness (EDS) often gets worse in men with moderate-severe OSA. It is unknown if insomnia and fatigue, symptoms more common in women with OSA, and if EDS in women, also worsen in moderate-severe OSA. The purpose of this study is to determine if insomnia, fatigue, and EDS worsen with increased OSA severity in women.
Methods: In an ongoing study of continuous positive airway pressure adherence in women, the baseline sample of women with complete data before treatment (N=43) were middle aged [Mean = 49 years (SD 14)] years), primarily white (76.4%), and not partnered (52.0%). Common symptoms found in women with OSA were measured using the Insomnia Severity Index (≥15 = moderate-severe insomnia), Promis Fatigue Scale (t-scores ≥ 50 = worse fatigue), as well as Epworth Sleepiness Scale (≥13= moderate-severe EDS). One-way ANOVA determined if there were statistically significant differences in means on the measured symptoms amongst the categories of OSA severity.
Results: EDS did not worsen: Mild [Mean=14.0 (SD=5.9)], Moderate [Mean=11.2 (SD=6.1)], Severe [Mean=14.7 (SD=4.4). Insomnia showed a tendency to worsen with increased OSA severity: Mild [Mean=16.2 (SD= 5.8)]; Moderate [Mean=16.6 (SD= 4.8)], Severe [Mean=19.2 (SD=6.1)]. Fatigue showed little association with increased OSA severity: Mild [t-score= 58 .8 (SD= 2.3)], Moderate [t-score=58.8 (SD= 2.3)], Severe [t-score= 57 (SD= 2.3)]. None of these means showed statistically significant differences (p>.05).
Conclusion: Women reported a high burden of EDS, fatigue, and insomnia at all categories of OSA severity. Clinicians should not expect that women with mild OSA will experience a lower symptom burden than those with moderate or severe OSA.

Ma, Yingzi

Institution: *NH - Dartmouth College*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Yingzi Ma *Chenfeng Ke*

Abstract Name: **Digital light processing enabled 3D-printing of thermo-responsive polyrotaxane hydrogels**

Rapid advancement in 3D printing technology has drawn research attention to developing 3D-printable functional materials includingbiocompatible hydrogels. In particular, thermo-responsive hydrogels–capable of undergoing reversible phase transition at specific temperatures–find a wide range of biomedical applications such as drug delivery, cell encapsulation, and tissue repair. In this work, I would like to present our recent design of 3D-printed thermo-responsive polyrotaxane hydrogels using Digital Light Processing (DLP). DLP uses photopolymerization to print three-dimensional objects layer-by-layer with high resolution. Polyrotaxane-based hydrogels, specifically,exhibit temperature-dependent size switching due to the controllable sliding motions of cyclodextrins macrocycles on the polymer axles. The UV curable resin is composed of methacrylate-functionalized Pluronic P123 (PEO20-PPO70-PEO20-MA2)–an amphiphilic, triblock copolymer comprising poly(ethylene oxide) (PEO) and poly(propylene oxide) (PPO)–and methylated-β-cyclodextrin(Me-β-CD). In water, β-CD forms inclusion complexes with P123 selectively on the PPO block because of favorable hydrophobic interactions. To prevent the formation of β-CD aggregates which leads to high viscosity, Me-β-CD was employed to reduce the hydrogen bonding interactions between neighboring CDs. Well-tailored UV curable resin possesses low viscosity and fast-curing kinetics suitable for DLP printing. Upon UV activation, P123-MA2 threaded with Me-β-CD undergoes free radical polymerization with acrylamide co-monomers to form covalently crosslinked hydrogels. Me-β-CD/P123 polyrotaxane hydrogels exhibit phase transition above the lower critical solution temperature (LCST) around physiological temperature due to the hydrophobic aggregation of the polyrotaxanes. Our 3D-printed polyrotaxane hydrogels are expected to exhibit temperature-dependent swelling behavior which can be further tailored toward various biomaterial applications.

Mack, Cindy N.

Institution: *MA - Bridgewater State University*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
Cindy N. Mack

Abstract Name: **A Life of Invisibility of the LGBTQIA+ community within The Republic of Trinidad and Tobago**

The Republic of Trinidad and Tobago had, up until 2018, criminalized homosexuality among male citizens only. Even though homosexuality has been de-criminalized, there are currently no protected rights in the Constitution for the LGBTQIA+ community. There are no rights regarding gender identity, sexual identity, same-sex marriage, civil unions, or adoption. LGBTQIA+ people do not have equal access to health services, nor protection from discrimination in employment and education. School systems do not offer sex education, no discussions in the legislature about issues such as gender-neutral restrooms. The purpose of my research is to amplify the voices of the LGBTQIA+ community in Trinidad and Tobago and bring to light the experiences of people living without basic protected rights. My IRB-approved research involves face-to-face and video interviews with12 LGBTQIA+ peopleand NGO allies. Through the interviews, which will be completed by January 14, 2023, I am discovering (a) how participants' live realities affect their mental health, the ability to gainful employment, and safely live their true selves. Reasons, why the Queer community has been left out of legislation aimed at Equity and Inclusion, have been morecultural in nature, creating societal problems within the diverse gay community in Trinidad and Tobago. The existence of harsh discriminatory lawshas forced many difficult choices resulting in living in fear, discrimination, violence, and in some cases death. The government has stagnated interest in generating legislation that protects LGBTQIA+ groups. These interviews are audio- or video-recorded, and excerpts will be used in a documentary video telling their stories, forced to be 'invisible'because of their sexual preference, and highlighting legal realities for LGBTQIA+ citizenry in the Republic of Trinidad and Tobago.My poster presentation will include de-identified information about participants, key opinions, quotations from the interviews, interview themes, and a QR code for the video.

Mack, Ella

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Chemistry/Materials Science

Author/Contributors:
Ella Mack,
Marty Bond,
Dong Hun Lee,
Sunghwan Lee,
Sujat Sen

Abstract Name: Nanoporous Bi-layer Structures for the Electrochemical Conversion of Carbon Dioxide to value-added chemicals

Prior research has shown that alloys of copper (Cu) with metals such as silver (Ag) or tin (Sn) have the ability to catalytically convert Carbon Dioxide (CO2) into economically useful products such as ethylene, methane or formate. Varying the particle size, surface morphology, texture, porosity and composition of these catalysts have been shown to dramatically change its electrocatalytic properties. However, these studies have been limited to the use of conventional liquid-phase reactors, which severely limits the rate of conversion, as determined by current densities of ~10 mA/cm2. Furthermore, translation of this catalytic performance to industrially relevant scales is not trivial, and is known to be highly sensitive to the local reaction environment, which in turn changes as a function of reaction rate.In this current work, we utilize dc/rf magnetron sputtering to deposit thin layers of copper, silver and specific combinations of the same on both stainless steel and gas-diffusion layer (GDL) substrates. Detailed characterization of these bi-layer thin films has been done through X-ray diffraction, Scanning electron Microscopy (SEM) as well as Energy-dispersive X-ray (EDX) analysis to determine relative ratios of the metals present, as well as changes in texture and porosity. Herein, we present on preliminary results showing the electrocatalytic performance of these thin films for the conversion of CO2 inside both liquid-fed conventional H-Cell reactors, as well as gas-fed flow reactors.

Macken, Emma

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Connor Garland,
Dylan Baumbach,
Jack Grevious,
Emma Macken,
Jordan Witzel

Abstract Name: The effects of Time Poverty on Stress and Life Satisfaction in university students and workforce participants

In an increasingly connected world, where work and school are just a click away, work-life has integrated more and more into personal-life taking more of one's personal time. Advancements in telecommunication, telecommuting to work, has contributed to an 'always on' culture that values productivity and always being available. In light of this, there is limited research on perceived time poverty. This study examines perceived time poverty in conjunction with environmental demands and their effects on stress and life satisfaction in the context of university students and workforce participants. A survey using scales on time poverty, irritation, and environmental demands were used in a quantitative analysis to measure their effects on stress and life satisfaction.

Madaris, Elijah

Institution: *GA - Kennesaw State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Elijah Madaris *Christopher Baden* *Sandip Das*

Abstract Name: **Development of an Internet Connected Remote Solar Module Current-Voltage Characterization System**

In recent years solar power has emerged as a promising sustainable energy solution within the renewable energy sector. The photovoltaic performance of solar panels degrade over time causing shift of its electrical characteristics. In addition, if major defects are generated, the current-voltage (I-V) characteristics change drastically. Therefore, by periodically acquiring and analyzing I-V characteristics of field deployed solar modules, we can monitor the health of the modules and also predict their power output under different environmental conditions. In this work, we have built an internet-connected remote experimental setup to measure the current-voltage (I-V) and power-voltage (P-V) characteristics of a solar module (or an array) of up to 300 Watts. The system consists of a DC electronic load, electronically controllable relays, and a Raspberry Pi single board computer (SBC) with integrated wi-fi capability. We have developed a python program which is deployed on the SBC. The python program communicates to the electronic load through USB serial interface. In a typical experiment, the electronic load is first set in constant voltage mode and then the voltage value is increased in small steps until it reaches the open-circuit voltage of the solar module. In each step, the current, voltage, and power values are measured and acquired by the SBC which are then used to trace the I-V and P-V curves. The Raspberry Pi transmits the data to the cloud which allows the I-V and P-V data to be accessed and viewed remotely. To enable full remote operation, we have created a Windows compatible graphical user interface (GUI) program using Microsoft Visual C#. The GUI allows running an experiment on-demand, logging continuous data throughout a day or multiple days, and analyzing the data to extract important electrical parameters of the module. Details of the system design, programming, and sample data will be presented.

Madden, Alexandra

Institution: *OK - Tulsa Community College Northeast Campus*

Discipline: **Public Health**

Author/Contributors:
Alexandra Madden

Abstract Name: **Identifying the Impact of Geographic Disparities in Adult Smokers**

The purpose of this project is to identify geographic disparities inadult smokers within Tulsa County and Osage County. Our community campus is located near the boundary of these two counties. A statistical comparison will be made to both state and national data. Smoking-Attributable Mortality data for the state of Oklahoma will be compared to survey data (BRFSS)for the purpose of recognizing the implications of smoking as an identified cause of death. Public Health initiatives regarding tobacco use are relevant and significant.Cigarette smoking is the leading cause of preventable death in the United States, causing approximately 480,000 deaths each year. Smoking has impacts on the smoker, as well as those individuals exposed to secondhand smoke. About 2.5 million people have died from medical problems caused by second-handsmoke since 1964. In addition, thirdhand smoke is persistent contamination by gases and particles from smoke that become embedded in surrounding household materials. These substances can be measured and do contain carcinogens. Cigarette butts contribute approximately 300,000 tons of potential microplastic fibers to the aquatic environment annually. The scope of this project includes comparison of CDCall-cause tobacco mortality data(SAM)and BRFSS data. Accessible data sources managed bythe US Office on Smoking and Health (OSH)can provide insight into public health disparities to describe impacts that are primary, secondary, tertiary and environmental.

Madison, Janessa

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Janessa Madison,
William Wagner,
Benjamin McManus,
Despina Stavrinos

Abstract Name: **Gender Effects and Peer Influences on Risky Driving**

Background: Distracted driving contributes to over half of all motor vehicle collisions (MVCs) involving teenagers. Driving with other teenagers is a risk factor for MVCs. Male teen drivers may be more influenced than female teen drivers. Teen male drivers also report driving more recklessly and with more distractions than teen female drivers, despite their perception that they are safe drivers.Method: Male (n=35) and female (n=45) newly licensed drivers reported the number of days they engage in distracted driving behaviors. They also reported their own driving habits and those of their closest friends on the Driving Behavior Questionnaire.Results: Compared to female drivers, male drivers reported a higher frequency of texting while driving, t(78)=2.41, p=.02, and committing driving violations, t(78)=2.32, p=.01. Self-report and report of friends on risky driving were correlated (driving errors, r=.65, p=.01; driving violations, r=.52, .01). Both males and females rated themselves as committing significantly fewer violations than friends, t(78)=2.84, p=.01, and t(78)=4.20, .01, respectively. Females' self-reports of driving errors were significantly lower than reports of friends' driving errors, t(78)=2.01, p=.04. Males' self-reports did not significantly differ from reports about their friends, t(78)=.96, p=.34.Discussion: Findings support a need for gender-specific teen driver injury prevention and education initiatives. Although teen males overestimate their driving safety, when directly compared to peers, female teens may similarly underestimate errors. Teenagers' opinions of their driving behaviors and risky driving practices might be the focus of prevention initiatives. Future interventions targeted at peer influences on teen driving safety should be created.

Mahabaduge, Hasitha

Institution: *GA - Georgia College and State University*

Discipline: FAN Abstract

Author/Contributors:
Hasitha Mahabaduge

Abstract Name: **Implementation of Vertically Integrated Projects (VIP) Program to Expand the Participation of Underrepresented Groups**

Research shows the underrepresented groups participate in undergraduate research at lower rates than their peers, and undergraduate research is difficult to scale-up to serve all students. The Vertically Integrated Projects (VIP) Program is a transformative approach to enhancing higher education by engaging undergraduate students in ambitious, long-term, large-scale, multidisciplinary project teams that are led by faculty. VIP model is designed to serve all students and has proven to be adaptable to varied institutions. Process of developing a VIP Program that successfully integrates research experiences into curriculum at a liberal arts college and its impact on students, faculty and staff will be presented. The challenges, possible remedies, and the educational benefits gained from this model will also be discussed using examples from several US and international institutions.

Maharaj, Nyla

Institution: ***CA - University of the Pacific***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Nyla Maharaj,
Jef Andrei Pelera,
Elizabeth Orwin

Abstract Name: Bioreactor for Corneal Tissue Engineering

Millions worldwide are negatively affected by a shortage in transplants used to treat patients with visual impairment caused by corneal damage[1]. Developments in tissue engineering of human corneas can increase the supply of corneal transplants to resolve the donor shortage. A bioreactor and a pressure control system to impart mechanical strain to growing tissue was developed and optimized to mimic the in-vivo corneal environment. Understanding how mechanical signals affect the protein expression of growing corneal cells can lead to more effective methods of engineering accurate corneal transplants. Previous studies have shown that corneal fibroblasts grown under physiological levels of mechanical strain differentiated into quiescent keratocytes, which have lower α-SMA protein levels compared to myofibroblasts, and are more representative of normal corneal tissue [2]. Corneal fibroblasts were isolated from the stromal layer of harvested New Zealand white rabbit eyes, and successfully seeded in our bioreactor system. Our bioreactor system allows us to study the effects of different levels of mechanical strain as well as electromagnetic stimuli on α-SMA protein levels in growing corneal tissue. These studies will help to produce more efficient methods of engineering new corneal tissue for transplants.

Mahler, Carlye

Institution: ***FL - Stetson University***

Discipline: History

Author/Contributors:
Carlye Mahler

Abstract Name: Dishing up Feminine Icons: The Business of Communicating Roles in The Post-War Kitchen

The invention of Betty Crocker exemplifies the tactics used by the food industry in their conversation with women in defining women's role in the post-war kitchen. A major contributor to the historical conversation around these convenience foods has been Laura Shapiro. Shapiro's work spanning multiple books highlights the methods and evolution of the methods used by the food industry to cultivate acceptance of convenience foods from consumers. The marketing lens is focused on by Katherine J. Parkin in her book Food is Love: Advertising and Gender Roles in Modern America. Parkin specifically explored the stubborn nature of food advertisers and their insistence on advertising to upper class white women, despite the profitability in targeting other demographics. Susan Marks' book, Finding Betty Crocker, provides a history of Betty Crocker and acknowledges her role as a powerful symbol. Communication scholar John R. Thompson explores the temporal aspects of industrial society and the place of convenience foods as 'genre benders' with unique market advantages. My work will contribute to this conversation by focusing on feminine icons, most notably Betty Crocker, but also less successful attempts in the genre. My work will focus on these icons as tools and rhetorical devices used by the food industry in an ultimately successful attempt to shape taste in favor of convenience foods. Using primary sources including advertising, letters, and branded cookbooks, I will trace the negotiation between the food industry and post-war women. It is important to trace how food has historically divided society and also created roles. In the post-war kitchen I argue that there exists a back and forth negotiation. Women's desires caused food advertising to mask themselves as a friendly companion through the creation of these feminine icons and their adjustments in the ways that convenience foods were used in the post-war kitchen.

Mahler, Samantha

Institution: *PA - Carnegie Mellon University*

Discipline: English/Linguistics

Author/Contributors:
Samantha Mahler

Abstract Name: **Foucault's Ideas Of Power And The Consequential Implications On Academic Bullshitting**

Foucault says that power moves all around. People claim that academic 'bullshitting' is the fault of students, yet the power in this relationship between student and academic bullshitting is multi-faceted and relies on the student, the teacher, the tested content, and outside circumstances. Dr. Frankfurt, a professor of philosophy at Princeton, studied bullshit extensively and defined it as "short of lying and those who choose to perpetrate it misrepresent themselves". Viewing this in an academic context, researchers see academic bullshitting as the idea of misrepresenting oneself for academic gain. Yet, the misrepresentation is not at the full fault of the student. In world-wide tragedies such as Covid-19, students lean on academic bullshitting, or cheating. This has been proven consistently, yet, what many have failed to consider is the lack of responsibility for this action that should fall onto the students. Power in academic bullshitting in this case is derived from the world-wide pandemic, not the individual choices of the students. Foucault often looks to the ruled rather than the rulers in relationships of power. When applying this train of thought to academic bullshitting one must look to the power that the ruled, or in this case, the students, hold. Being told what to learn and when leaves them with little power in their academic choices, leaving power to teachers, administrators, and educational content. It has been proven that "Cheating is more likely among lower achieving students" (Finn and Frone) which reveals that the power from outside sources causing students to cheat leads to lower academic success. In a similar sense, students who feel powerless due to their low academic achievement may feel more drawn to academic bullshitting. Academic bullshit is an issue that plagues students, however, the power in this choice to cheat lies far beyond the student themselves.

Main, Wyatt

Institution: *OK - Cameron University*

Discipline: Physics/Astronomy

Author/Contributors:
Dalton Chase,
Susmita Hazra,
Wyatt Main

Abstract Name: **Solar Cycle Variability and its effect of Geomagnetic Activity**

Variation of Sun's magnetic field and its activities are governed by an 11-year cycle, called the solar cycle. Solar cycle influences the activity on the surface of the Sun, resulting in sunspots which are caused by the Sun's magnetic fields stretching and becoming intertwined.The highly active Sun during solar maxima emits higher volume of radiation, higher energetic charge particles with magnetic flux and thus create hazardous space weather and can affect Earth's atmosphere too.In this research, we are presenting the variability of solar activity in solar cycles 23,24 and its influence on geomagnetic activities. We have studied sunspot numbers, F10.7 flux, solar wind speed, and Coronal Mass Ejection (CME).For solar activity, we are using GOES, ACE satellite data. For geomagnetic activities we are usingKp,DsTindex data. We are categorizing the geomagnetic activity data for low latitude (0-250), mid latitude (250-500), and high latitude (>500).Understandingsolar activity and its effects onspace weather and Earth's atmosphere is highly important. This work will be helpful in building a framework for an empirical model for future solar activity prediction.

Majewski, Madyson

Institution: ***WI - University of Wisconsin-Oshkosh***

Discipline: Biology

Author/Contributors:
Madyson Majewski

Abstract Name: Positive Reward Conditioning 13-Lined Ground Squirrels

The 13-Lined Ground Squirrel (13-LGS) visual system is remarkably similar to that of humans, making it a useful animal model for blinding diseases and prompting research to create 13-LGS mutants with human hereditary retinal degenerations. While humans can report visual function by using an eye chart, rodents must be tested by using the Optomotor Reflex (OMR) Device. The OMR is a head movement tracking device equipped with moving stripes and a camera. The user controls the size and speed of the stripes: thick-slow moving stripes are like the large letters on the human eye chart, whereas thin-fast moving stripes are like the smaller letters. When the animal can see the stripes move, its head will move reflexively to track them. When the animal can no longer see the stripe movement, the corresponding head movements cease. The OMR requires the unrestrained animal subject to always voluntarily remain on the platform in camera focus. The OMR has never been attempted with 13-LGS, so this project addressed the species' response to the device and how positive reward conditioning might facilitate its successful use. The training scheme used and the time frame over which it occurred gave only one clear positive (a male) among the 8 juvenile littermate subjects, although a female also showed intermittent improvement to a lesser extent. These data suggest that, under the conditions employed, we expect significant inter-individual variation in how well positive reward conditioning works for the task of remaining on the raised platform of an OMR device.

Maleska, Kelli

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sophia Symalla *Morgan Robinson* *Kelli Maleska*

Abstract Name: False Memories: the Fear Factor

Purpose: How does mood affect susceptibility to false memories? People are less likely to form false memories when sad, ostensibly because sadness encourages memory encoding of item-level information, while neutral moods encourage holistic processing, in favor of the gist (Storbeck, 2013). Though the protective benefit of sadness in avoiding false memories has been demonstrated, we investigate how both sadnessand fear–another important negative emotion– affect susceptibility to false memories. This is significant to investigate because when a negative event is experienced, people often remember vivid and specific details of the incident. In these traumatic scenarios, fear is likely the strongest emotion. From our work, we will be able to demonstrate whether fear, like sadness, protects against false memories.ProcedureParticipants view movie clips validated to reliably elicit the desired emotions: neutral, sadness, fear (Gross; Levenson, 1995; Hewig et al., 2005) and rate their mood using the positive and negative affective schedule (PANAS). False memory susceptibility is evaluated with the Deese–Roediger–McDermott (DRM) paradigm in which participants study lists of words that are each related to a critical, unpresented lure, then take memory tests on the words. If a participant misremembers a critical lure as being presented, a false memory has occurred (Roediger; McDermott, 1995). The mean number of falsely recognized critical lures across the three mood conditions will be analyzed using ANOVA. This project has received IRB approval and data collection has begun.Expected Results and ImplicationsIf fear, like sadness, confers a protective benefit against forming false memories as we hypothesize, participants in neutral moods will have significantly more false memories than sad or fearful participants. Of theoretical significance, we will determine if fear, like sadness, encourages detail over gist processing. Of applied significance, this study may add to our understanding of memory formation in traumatic situations.

Malhotra, Aarushi

Institution: *MD - University of Maryland College Park*

Discipline: **Business**

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Aarushi Malhotra,
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Rachel Antony,
Benjamin Bral,
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Johnny Rajala,
Daniel Zhu,
Kyle Truong

Abstract Name: **Detecting Bias in Intelligent Autonomous Hiring Systems**

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Malik, Zahira

Institution: *MI - Wayne State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Zahira Malik,
Tiffany Cook,
Ryan Thummel

Abstract Name: **Characterization of Prox1a Expression and Function During Retinal Development in Zebrafish**

Prospero (Pros)/Prox1 is a highly conserved transcription factor that was originally identified and characterized in the fruit fly (Drosophila melanogaster). These studies showed that Pros functions in neural stem cell proliferation and neuronal-glial fate decisions. Additionally, in vertebrate models, Prox1 was shown to function in the development of the pancreas, liver, and lymphatic systems. Finally, variations in human PROX1 expression have been linked to multiple human cancers, obesity, and diabetes. The current project sought to explore the expression and function of Prox1 in zebrafish retinal development. Prox1 expression was revealed using a recently generated antisera specific to zebrafish prox1a, and Prox1 function was determined by characterizing retinal development in the prox1a mutant line. Immunohistochemistry revealed that Prox1a was expressed in newly formed neurons exiting the stem cell niche in the marginal zones of the retina. This expression profile was not present in the prox1a mutant retinas, suggesting specificity of the antisera. Functionally, we observed that prox1a mutant embryos were micro-ophthalmic, but correctly formed all three laminar nuclear layers of the retina and an optic nerve. Furthermore, rods and cone photoreceptors were both present in prox1a mutant retinas and appeared morphologically normal. Given these findings, we hypothesize that Prox1 expression in the developing zebrafish retina plays a conserved role in stem cell proliferation/neuronal-glial cell specification, and when disrupted leads to the micro-ophthalmic state we observed in the prox1a mutant embryos. Future directions will explore a potential role for Prox1 during other aspects of cell proliferation and specification in the central nervous system, including during adult retinal regeneration in zebrafish.

Malin, Ilka

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biology**

Author/Contributors:
Alyssa Corder,
Ilka Malin,
Tia Ravara,
Chelsea Ortiz-Jimenez,
Jennifer Smith

Abstract Name: **Caught on camera: Are humans a safety cue for mammalian vertebrates?**

Anthropogenic pressures are imposing environmental modifications at unprecedented spatial and temporal scales to drive ecological change. One provocative notion is that fear of humans (so called “super-predators”) in human-altered landscapes may substitute for predation pressures that were historically imposed by large mammalian carnivores. This project addresses the question of whether free-living mammals actively avoid or are attracted to human presence over space and time. We examined the impact of human activities on the assemblages of free-living mammals as part of a long-term behavioral ecology study at Briones Regional Park in California. Specifically, we characterized the presence of humans, their dogs, and native vertebrates by analyzing thousands of photos from automated-camera traps (e.g., trail cams deployed over the past several years). We tagged photos of coyotes, bobcats, deer, skunks, and ground squirrels using the image software organizer “digiKam” and analyzed the data using the R statistical package “camtrapR.” We report on variation in the visitation rates by mammals across space and time to uncover the interrelationships among multiple species within the park. Our data set documents the crepuscular activities of carnivorans (e.g., bobcats, coyotes, skunks) and offers insights into the potential effects of visitation by humans (and dogs) on the lives of these elusive mammals. This information about the activity schedule of these animals offers key insights into the behavioral ecology of these animals as well as useful information for wildlife managers as burgeoning human populations visit natural areas.

Mallet, Jacob

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jacob Mallet,
Rushit Dave,
Mounika Vanamala

Abstract Name: **Deepfake Detection Using Support Vector Machine and Convolution Neural Network**

Social media is currently being used by many individuals online as a major source of information. However, not all information shared online is true, even photos and videos can be doctored. Deepfakes have recently risen with the rise of technological advancement and have allowed nefarious online users to replace one’s face with a computer-generated face of anyone they would like, including important political and cultural figures. Deepfakes are now a tool with the potential to spread mass misinformation. There is now an immense need to create models that are able to detect deepfakes and keep them from being spread as seemingly real images or videos. In this paper, we propose a new deepfake detection schema using two popular machine learning algorithms; support vector machine and convolutional neural network, along with a publicly available deepfake dataset retrieved from Kaggle combined with real faces from the Flickr-Faces-HQ (FFHQ) datasetto accurately detect deepfakes in images with accuracy rates reaching as high as 88.33%.

Mallia, Francesca

Institution: *TN - Middle Tennessee State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Francesca Mallia

Abstract Name: **People with Antisocial Personality Disorder and Psychopathic Traits and their Self-Talk**

Introduction: The purpose of this research is to find out the frequency and kind of self-talk individuals with Antisocial Personality Disorder (ASPD) and psychopathic traits experience. ASPD is a debilitating mental illness that interrupts how the individuals relate with others and view themselves. This disorder typically causes a lack of empathy and a lack of remorse for damaging actions. This study analyzes the inner experiences of those with traits of ASPD and psychopathy. We expected that those with more ASPD characteristics would report more frequent self-talk overall as well as higher levels of several kinds of self-talk, compared to those with fewer ASPD characteristics. Method: Surveys were given via Qualtrics to college student research participants (N = 134, 72% female). The survey consisted of measures of automatic positive and negative thoughts, general self-talk, ASPD, and psychopathic traits, as well as demographic items. The order of presentation of the main measures was counterbalanced across participants. Results: We found that social-assessing self-talk was negatively correlated with antisocial self-control ($p = 0.038$) and positively correlated with antisocial self-esteem ($p = 0.019$). We found that antisocial deviance was positively correlated with self-critical self-talk ($p = 0.015$) and antisocial extraversion was negatively correlated with self-critical self-talk ($p = 0.015$). Psychopathic callousness was negatively correlated with self-managing self-talk ($p = 0.022$). Antisocial psychopathy was positively correlated with self-critical self-talk ($p = 0.004$) and social-assessing self-talk ($p = 0.016$). In addition, negative automatic thoughts were significantly associated with a wide range of ASPD characteristics. Discussion: As we predicted, individuals with traits of ASPD and psychopathy show patterns of self-talk and automatic thoughts that are theoretically meaningful. We will discuss the implications of these results for personality and clinical psychology

Malo, SkyeLi

Institution: *WI - Northland College*

Discipline: Education

Author/Contributors:
SkyeLi Malo

Abstract Name: **Analyzing limited reform efforts through the dynamics of curriculum**

This analysis of education-centered articles from a Foundations of Education course will bring insight into how educational theorist's critique the exclusive focus on mainstream curriculum by persons of privilege, and how it creates a lack of acknowledgment for the influences null and hidden curriculum have on students as they pursue their education. Themes of the origins of American education, struggle towards meaningful reform, the integration of assimilation and separatism into curriculum and school infrastructure, as well as the current struggles such unavailability of equal and equitable education for all students pervading into education supports the notion that an elite minority continuously perpetuate ideologies of inequality into their false movement towards accessible and inclusive education by making infrequent and minute changes to the mainstream curriculum to subdue the demand for school reform. This elite minority embodies a false subscription to progressive values, which is weaponized through tacit acknowledgment of issues within the structure of mainstream curriculum and repudiating the influence that null and hidden curriculums have on a student's ability to learn and find community. The intentional disregard for reform within the null and hidden curriculum creates an environment that assimilates students into perpetuating harmful social behaviors, unjust and heavily influenced political beliefs, as well as negates the already limited government efforts to create equal opportunities for and equitable education for students. In order to create a more effective and equitable learning environment, educational reform needs to move out of the hands of the elite minority and into the hands of the affected student body. By creating a more dynamic and open narrative to share experiences from the system shaped by null and hidden curriculum, reform can take placeKeywords: education, ideologies, null and hidden curriculum

Manary, Sarah

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Biology

Author/Contributors:
Sarah Manary

Abstract Name: Phagocytosis by RAW Macrophage Cells

Macrophages are a type of white blood cell and are an important part of the innate immune system. Macrophages have a role in removing dead cells, stimulating other parts of the immune system, and disposing of invading organisms. Macrophage function in part by using phagocytosis to engulf foreign bodies (e.g. bacteria). During phagocytosis, cells engulf microorganisms by encircling their plasma membrane around the target and endocytosing it into their cytoplasm. Phagocytosis gives them the capability to immobilize potentially harmful pathogens and allows them to safely remove them from the organism. The RAW 264.7 cell line is a transformed macrophage cell line derived from mice. It is a popular cell line for testing because it continuously proliferates and is hardy for in vitro work. This research project is aimed at demonstrating and imaging the process of phagocytosis by RAW macrophage cells. Microbeads coated with fluorescein conjugated to rabbit-IgG antibodies are used to observe the engulfing process as the cells slowly bring their “prey” into their cytoplasm. This process is captured using a fluorescence microscope. Observing how macrophage cells perform in cell culture provides insight into the roles they play in their original organism.

Mandujano, Stephany

Institution: ***WI - Carthage College***

Discipline: History

Author/Contributors:
Stephany Mandujano

Abstract Name: Traumatization During the Argentine Dirty War

From 1976 to 1983, four military juntas, each led by a different commander, assumed power in a period known as the Argentine Dirty War. The first junta was established from 1976 to 1981 under the leadership of General Rafael Videla, Admiral Emilio Massera, and Brigadier General Orlando Agosti. Together the leaders of Argentina’s 1976 junta began the Process of National Reorganization, which allowed for the reduction of the power of government institutions and the persecution of subversives. People categorized this way by the Argentine junta were taken without warning from their homes, jobs, and off the streets and were transported to secret detention centers and concentration camps where they were tortured for information and murdered. The junta’s actions have left an imprint on Argentina not only on an individual level but on a societal one. The topic of this paper addresses one of the most horrific human rights violations in Argentina’s history. The paper views the origins and course of the Dirty War, the individuals involved, explains the Process of National Reorganization in a step-by-step manner, and looks at what human rights abuses occurred and where they were committed. Ultimately, arguing that the victims of the terror and systematic process of torture that began with the passing of the Process of National Reorganization during the leadership of Rafael Videla resulted in the traumatization of its victims, and said trauma changed Argentina’s society. The societal shift caused by this period can be viewed through the changes to Argentina’s lexicon, the significance of specific symbols due to the Dirty War, and the collective remembrance of the events. This study examines a journal article, textbooks, interviews and personal recollections of victims, and confessions of torturers to reveal the impact of the Dirty War on individuals and Argentine society from 1976 to 1981.

Mangold, Sydney

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Sydney Mangold,
Savannah Bynaum,
Erica Duran,
Vianca Medina

Abstract Name: **Diversification Factors Affecting Meal Service Recruitment**

This study focuses on exploring the impact of diversity at Meals on Wheels and the factors involved in the limited number of participants of color who are part of the underserved population.There are clients that are unable to communicate with the agency because of language barriers.The type of research design is exploratory. The research explores a new topic and seeks to discover the effect that Meals on Wheels staff has on clients.Researchers created a 17-question survey that included open ended and closed ended questions to ask 100 community residents of color.

Manning, Hannah

Institution: *NH - University of New Hampshire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hannah Manning

Abstract Name: **Establishing Behavioral and Neurobiological Markers Associated with Ethanol Vulnerable Phenotype**

Alcohol use disorder (AUD) is a chronic and relapsing brain disease. It is characterized by excessive consumption of alcohol, using alcohol in the face of negative consequences, and the experience of withdrawal symptoms. In 2019, it was reported that 14.1 million Americans over the age of 18 had been diagnosed with AUD. With excessive alcohol use causing 140,000 deaths a year in the U.S., treatment of AUD is an important social issue. While there are treatments available, such as mutual help groups, cognitive behavioral therapy, and medication, there are still challenges posed by the chronic relapsing characteristic of the disease. Further research still needs to be done into the behavioral aspect of alcohol consumption and the neural activity that is involved in a relapse event. In this study, we used a preclinical rodent model of ethanol self-administration to attempt to establish a vulnerable to ethanol-use phenotype. To accomplish this, we utilized behavioral economics to determine which rats have a high and low demand for ethanol. We hypothesized that rats with high demand for ethanol would show persistent responding in the face of negative consequences (the electric shock) and would have a distinct neural profile during the relapse compared to rats with low demand. Our findings show that some rats work harder for ethanol than others based on the assessment of their economic demand for ethanol. We also show that rats with higher economic demand for ethanol continue perusing ethanol in the face of negative consequences and have higher cue-induced reinstatement than rats who had lower demand for ethanol. Therefore, for the first time, we are showing the approach to identify a vulnerable to ethanol use phenotype on the individual level encompassing a constellation of behaviors spanning from using phase to the relapse phase.

Mannino, Lilian

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Nursing/Health Science

Author/Contributors:
Lilian Mannino

Abstract Name: Investigating Whether Dietary Nutrition Can Impact Sex Ratios in Drosophila melanogaster

In organisms with genetic sex determination, the number of males and the number of females is generally expected to be equal at birth. Sex ratios have long been researched, but many questions are still left unanswered. The Trivers-Willard hypothesis states that sex ratios could be altered due to the relative stress that a mating pair may face while reproducing. This hypothesis has been supported by several scientific studies in mammals, but it could benefit from more research in a wider variety of organisms. I raised fruit flies (Drosophila melanogaster) in various media to determine whether nutrition has an effect on the produced sex ratio. There were six experimental conditions where the amount of lipids, carbohydrates, or proteins was increased or decreased by 30%, and one control group with standard nutritional media. Here we ask, does a scarcity of nutrition cause a skewed sex ratio; if so, what change in nutrient causes it? Studies have shown that males are selected more often when females are exposed to a high nutrient food supply. I hypothesized that the group exposed to a low fat diet will be significantly skewed towards the females, as they would not be ingesting the needed fat content, resulting in body distress. The results of this test will expand the understanding of factors that affect sex ratios.

Mantraratnam, Haripriya

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Haripriya Mantraratnam

Abstract Name: Humanity, from Life to Death

Inspired by an interdisciplinary seminar on sustainability, this triptych comments on human identity and its sustainability. "Flower Constellation" conveys the full bloom of human life and nature. Imagery of constellations and religion reveals human invention and beauty. Stars exist independently of humanity, but constellations are a human creation and add to the beauty of stars. The painting also depicts the famous Hindu image of Brahma the creator sitting on a lotus sprouting from Vishnu the preserver. “Dewdrop” acknowledges the toll of creativity on artists, such as Mary Wollstonecraft, Emily Dickinson, Antoine de Saint-Exupéry, and Vincent Van Gogh, whose words form the arch above the wildflowers. Art can be unsustainable to the individual; people with difficult lives often have artistic talent. The flower image itself alludes to the poem “On a Drop of Dew” by Andrew Marvell, which portrays humanity straining to return to heaven in the same way that a dew drop strains to return to the atmosphere. Since the shape of the arch resembles a bell jar over a rose and a door to heaven, the painting simultaneously symbolizes preservation and death. Finally, given that the Voyager Golden Records aim to preserve the essence of humanity, “Golden Record” asks how an individual would choose to represent their own identity for eternity. The artist includes several of her personal choices slipping away from the Golden Record and disappearing into space while Earth, the pale blue dot, is far in the distance. On the Golden Record itself is written the name of a song actually selected, “Jaat Kahan Ho”, which means “where are you going”. The Golden Record, the memory of all humanity, drifts into unknown territory, distant and alone in space.

Mantuano, Alessandra

Institution: *KY - University of Kentucky*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Alessandra Mantuano *Alexander Sklivas* *Amy Confides,*
Esther Dupont-Versteegden *Timothy Butterfield*

Abstract Name: **Mechanotherapy Attenuates Collagen Accumulation, but Not Muscle Atrophy in Female Rats**

Background: Mechanotherapy in the form of cyclic-compressive loading (massage) induces an anabolic response during recovery from atrophy in male rats, but does not attenuate atrophy when applied during disuse. Preliminary data show females respond differently to mechanotherapy than males during recovery from atrophy. However, the response to mechanotherapy during disuse has not been evaluated. Objective: To determine the response to mechanotherapy during atrophy. Hypothesis: Mechanotherapy during disuse will reduce muscle atrophy in female rats. Methods:10-month-old female BN/F344 rats were randomly assigned to three groups: weight-bearing (WB; n=6), hindlimb suspension to induce atrophy (HS; n=7), and HS with massage (HSM; n=7). HS and HSM were suspended for 7 days during which HSM received 30 minutes of mechanotherapy every other day on the right gastrocnemius muscle beginning the first day of suspension (total 4 bouts). Mean fiber cross-sectional area (CSA) and fiber type distribution (MyHC), satellite cell number (Pax7+ cells), collagen percentage (picrosirius red), and myonuclear number (dystrophin-DAPI+) were analyzed on the right gastrocnemius muscle. One-way ANOVA was preformed, and statistical significance was assumed at 0.05. Results: Bodyweights of HS and HSM were significantly lower than WB. CSA was lower in HS (2096 ± 127.4; p=0.0011) and HSM (2228 ± 130.7; p=0.0050) compared to WB (2892 ± 68.26), with no significant difference between HS and HSM. Fiber type distribution and satellite cell number were not significantly different between groups (p 0.05). Collagen percentage was significantly higher in HS (10.4 ± 0.3) than in WB (8.0 ± 0.2; 0.0001) and HSM (9.0 ± 0.3; p=0.0040), while HSM was not different from WB (p.0.05). Conclusion:Mechanotherapy did not attenuate atrophy but is beneficial in preventing buildup of collagen in the extracellular matrix, thereby potentially reducing fibrosis due to atrophy. Work supported by NIH grant AT009268.

Manu, Caleb

Institution: *VA - Hampden-Sydney College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Caleb Manu,
Michael Wolyniak

Abstract Name: **Isolation of M. smegmatis bacteriophage lysin B and characterization of its potential as an antimicrobial agent for M. tuberculosis**

Phages are viruses that infect bacterial cells. The recent surge in antibacterial-resistant bacteria has brought attention to bacteriophages as an alternative treatment for pathogenic bacterial infectious diseases such astuberculosis, leprosy, and wound infections. Recently, scientists have demonstrated that bacteriophages can be used to reduce Salmonella species in meat and poultry products, a discovery that reignited interest in phage therapy as a means of controlling pathogenic bacteria.Toexplore the potential for phage therapy as a means of fighting pathogenic bacteria, we isolated phage LestyG from Mycobacterium smegmatis, arelative of the bacterium responsible for tuberculosis.Further analyses were made on the annotated genes by comparing the genome of LestyG to that of DS6A, the only bacteriophage discovered from Mycobacterium tuberculosis. It was discovered that LestyG has one gene in close homology with DS6A: gene 48 in LestyG and gene 72 in DS6A. Gene 48 codes for lysin B, a mycolylarabinogalactan esterase that cleaves the ester bond between arabinogalactan and mycolic acid and, thus, compromises the link between the mycobacteria cell wall and the outer membrane to completes cell lysis. Because of the potential in lysin B for disrupting the cell wall structure of pathogenic bacteria, it became the focus of our research.We have successfully cloned the LestyG Lysin B gene into a protein expression vector for the purposes of characterizing the ability of this protein to influence Mycobacterium pathogenesis. We intend to extend this investigation into the effects of Lysin B on an attenuated strain of M. tuberculosis to determine whether lysin B compromises the integrity of the cell wall of M. tuberculosis, thereby weakening its resistance to antibiotics. This experiment is ultimately aimed to be the foundational model of the use of lysin B in conjunction withantibiotics to effectively treat tuberculosis.

Manugian, Tim

Institution: *DC - American University*

Discipline: History

Author/Contributors:
Tim Manugian

Abstract Name: **The Staying Power of the Klan: An Investigation of Groton, Massachusetts**

American inquiries into white supremacy often center around the South and the legacy of slavery. While more Americans are beginning to confront the fact that white supremacy's roots reach beyond the historic slave-holding states, there are many places where the legacy of white supremacy remains hidden, particularly in currently politically liberal North Eastern states. The Town of Groton's proximity to the educated liberal Northern elite then makes itshistory of Klan activity a question of interest. As a small town with a strong archival tradition, Groton's rich collection of primary sources from local historical societies andmunicipal orprivate collections enabled the effective study of the effects and legacy of the Klan. The town's intimaterelations, careful census and notarial records, and active local press make it possible to trace the impact of individuals associated with the Klan, organizations affected by the Klan, and the public boards that elected Klan-endorsed candidates to municipal office. I was able to reconstruct a complex set of social dynamics that, taken in totality, force us to question our preconceived notions of white supremacy in US politics.The empirical questions that this study addresses include: How did the Klan arrive in Groton, and what was the extent of its support? How did resistance to and support for the Klan shape the town, particularly along gendered lines? How did the Klan seek to redefine what it meant to be a citizen of Groton? These empirically-based questions allow me to reflect on the followingissues: What does Groton's experience with the Klan in the first three decades of the twentieth century tell us about our national histories of the second wave of Klan activities, which until now have focused on other regions? How might Groton's experience with theKlan inform our understanding of right-wing social movements today?

Manuntag, Marinelle

Institution: *WI - Alverno College*

Discipline: Biology

Author/Contributors:
Marinelle Manuntag,
Eulandria Biddle

Abstract Name: **Antimicrobial Activity of Earthworm and Raw Honey Bacteria Against Human & Fish Pathogenic Bacteria**

Many medical treatments rely on antibiotics to treat infections. Due to repeated and improper use of antibiotics some bacteria have developed antibiotic resistance making them unaffected by antibiotics that were originally designed to kill them or inhibit their growth. The purpose of this study is to find bacterial isolates that have antimicrobial activity against human and fish pathogens, providing us with a possible alternative source for new antibiotics. Secondary metabolites derived from bacteria found in earthworms and raw honey offer a wide range of health benefits including anti-inflammatory, antioxidants and antidepressant properties and are reasonable candidates to test for antimicrobial activity against pathogenic bacteria. In this experiment bacteria from earthworms and raw honey were isolated and tested against fish/human pathogenic bacteria. Locally collected earthworms were euthanized with 70% alcohol and crushed into a paste. Sterile distilled water was used to make 10-fold serial dilutions of up to 106. Raw honey obtained from a local honey farm was melted and diluted with sterile distilled water in a 1:1 ratio. Both sample dilutions were plated onto nutrient agar medium and incubated at 30°C for 24 hours. Colonies were counted to calculate the cfu/g and also patched onto Brain Heart Infusion (BHI) agar and incubated overnight at 30°C. Bacterial isolates were tested for antimicrobial activity against a variety of pathogenic bacteria. In total, 24 isolates showed antimicrobial activity against the pathogens (23 from earthworms, one from raw honey). Future research will consist of testing antimicrobial activity of the isolates on different media, identification by DNA sequencing, characterization of metabolic profiles, and isolating bacteria from other organisms.

Manzeck, Katie

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Biology**

Author/Contributors:
Katie Manzeck

Abstract Name: **Analyzing the impact of bottleneck size on the recovery of influenza A replication capacity**

Influenza viruses cause annual epidemics and occasional pandemics throughout the world. About 11% of the U.S. population contracts the flu every year, resulting in hospitalizations and death. The influenza virus is a segmented negative-sense RNA virus. It contains eight RNA strands that each code for one or more viral proteins needed for attachment and proliferation in a host. One of these proteins is RNA-dependent RNA polymerase (RdRp) and it is needed to copy the RNA genome of the influenza virus. During transcription, RdRp has shown a high error rate due to a lack of proofreading ability. This results in the generation of mutations, creating a genetically related but distinct population of influenza viruses with a relatively high level of genetic diversity. Analyzing the causes and implications of this genetic diversity helps understand the ubiquity of influenza epidemics. A dilapidated virus generated as a product of prior research will be used to analyze two bottleneck conditions. The dilapidated virus was sequentially passaged in MDCK cells under two bottleneck sizes. The resulting viruses were used to compare replicative capacity following the bottleneck. Each virus is sequenced and after receiving the genome, we will look for inconsistencies that could correlate with varying degrees of fitness. Based on current data, new primers are being designed to account for currently unsuccessful sequencing. Once sequencing is complete, mutations will be evaluated.

Marchiafava, Madeline

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Madeline Marchiafava *Bryanna Rayhorn* *Jacob Huffaker,*
Sarah Vitale *Holly Dolliver* *J Brian Mahoney*

Abstract Name: **A comparison of geologic influence on phosphorus loading through lacustrine groundwater discharge in three lakes in western Wisconsin**

Lake eutrophication in Wisconsin and throughout the upper Midwest has resulted in severe environmental and economic impacts across the region. Most lake eutrophication events are attributed to excess phosphorus loading. Historically it has been assumed that phosphorus is primarily contributed from agricultural sources and migrates through sediment runoff. Recent investigations have demonstrated that phosphorus is elevated in both surface water and groundwater in western Wisconsin, and that lower Cambrian bedrock may be a significant contributor of phosphorus to the hydrologic system. Case studies were conducted in lakes positioned in three different geologic settings common to western Wisconsin. This includes settings of thick sand and gravel overlying Cambrian Mt. Simon sandstone (Mud Lake, Barron County), thin sand and gravel overlying shallow Cambrian Mt. Simon sandstone (Lake Altoona, Eau Claire County), and glacial deposits overlying Ordovician Prairie du Chien Group (Bass Lake, St. Croix County). The average concentration of phosphorous in surface water of Mud Lake is around 43.6 ppb and the groundwater average is around 283 ppb. Average concentration of phosphorous in surface water of Lake Altoona is around 71 ppb and the groundwater is around 184 ppb. In Bass Lake the average phosphorous concentration is around 4.1 ppb for surface water and 82 ppb for groundwater. Overall, the data demonstrated high phosphorous levels consistent with interaction in the Lower Cambrian units (Mt Simon). This study provides a preliminary understanding of how geologic setting may influence groundwater phosphorous loading in the investigated lake systems.

Marder, Michelle

Institution: *NC - Elon University*

Discipline: Biology

Author/Contributors:
Michelle Marder

Abstract Name: **Investigating Interactions Between Bacteria Infecting Patients with Cystic Fibrosis**

Lung infections in cystic fibrosis (CF) patients are the main cause of morbidity and mortality, and most are caused by either Staphylococcus aureus (SA) or Pseudomonas aeruginosa (PA). SA infections are mostly present in younger CF patients, but as they age, there are fewer SA infections and more PA infections. CF patients coinfected with SA and PA have worse outcomes than those infected with only one type of bacteria. PA is known to kill SA in coculture, so the mechanisms of how they coexist are unknown. Therefore, this project aims to investigate the interactions between two PA laboratory strains and various clinical isolates of SA. The two PA strains used are PAO1, a wild-type PA strain known to kill SA, and PDO300, a strain of PA known as mucoid, which produces an abundance of polysaccharides and coexists with SA. The SA clinical isolates are each grown separately and then mixed with the two PA strains separately and also with JE2, a reference SA strain that is known to be killed by PAO1 and coexist with PDO300. We observed three different outcomes for the clinical SA isolates: the wild-type PA strain only killed the SA, the wild-type and mucoid strain killed the SA, or the SA survived coculture with both PA strains. Most isolates were killed by PAO1 and fewer isolates were killed by PDO300. This data will help us determine the variety of interactions between SA and PA and how prevalent these interactions are among these clinical isolates. Further data needs to be collected to determine the correlation between the interaction of SA and PA and other noteworthy clinical phenotypes. This work will help us identify the prevalence of coexistence between these two clinically important bacteria and potentially identify ways to prevent coinfection and the accompanying decline in patient health.

Marie, Nicole

Institution: *PA - Drexel University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Nicole Marie,
Brian Daly

Abstract Name: **College Students' Perception of School-Based Mental Health Services: A Scoping Review**

The global prevalence and severity of mental illnesses are increasing among late adolescents and college students. One model to address these issues is school-based mental health services (SBMHS) which provide mental health (MH) services and resources on an individual or classroom-wide basis. SBMHS have the advantage of making treatment more accessible compared to community-based external MH services. Research efforts are starting to examine the short-term outcomes of SBMHS, as well as college students' view of MH treatment. To date, undergraduates' satisfaction with previous use of SBMHS remains largely unknown. Thus, a scoping review of the literature was conducted to assess this knowledge gap. Five databases (PubMED, Web of Science, PsycINFO, ERIC, and Cochrane Library) were searched to identify 361 English language papers published between January 2000 and June 2022. Search terms were related to undergraduates, SBMHS, perception, and satisfaction with SBMHS. After screening titles and abstracts, assessing full texts for eligibility, and searching within relevant reference lists, the search yielded zero publications addressing college students' perceptions of high school SBMHS. With the absence of eligible articles indicating a significant gap in the literature, the focus of the review shifted to examine the need for further research in this area. Research on MH services received by high school students should expand to cover perceptions of service effectiveness on MH challenges faced as a college student. As MH research advances, further understanding of the long-lasting impacts of SBMHS is needed to guide service improvements and intervene early to address mental health problems.

Markham, Ian

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Ian Markham *Mark Walter* *Michael Piepenbrink*
James Kobie

Abstract Name: **Novel Monoclonal Antibodies Against Influenza N2 Neuraminidase**

Influenza poses a very large problem to public health. The disease spreads quickly and in the most severe cases, can be lethal. Additionally, vaccinations against influenza must be updated yearly and tend to have notoriously low efficacies among vaccines, owing to the virus's tendency to mutate very rapidly to the point that its surface antigens no longer closely resemble those used in previous vaccinations, a process known as antigenic drift. Furthermore, like almost all vaccines, vaccination against influenza is a prophylactic measure and will not help against preexisting infections as therapeutics would. One therapeutic currently being explored for its use against influenza, monoclonal antibodies (mAbs) are antibodies derived from a single clonal B cell lineage that are all reactive against the same epitope. Currently, most mAbs being developed against influenza are reactive toward hemagglutinin (HA), the predominant glycoprotein on the virus that's responsible for binding and allowing the virus to enter the host cell. However, because HA is so common, it is most often targeted by the immune system and therefore, is subject to the most selection pressure. As such, these mAbs may suffer the same pitfalls as vaccines and could require frequent updates. Alternatively, targeting a mAb against neuraminidase (NA), another surface glycoprotein that functions in viral budding and cell-to-cell spread, could yield similar efficacy without the pitfalls of binding such variable antigens. This goal is exactly what our project aims to accomplish. In particular, we would like to target N2 due to the exceptional prevalence and variability of the H3N2 influenza virus subtype. We aim to generate N2 reactive mAbs and characterize their binding and inhibition profiles. We have already completed preliminary experiments, and our results are promising, as we have thus far successfully generated and characterized the binding profile of a single N2 specific mAb.

Markowitz, David

Institution: *PA - Lafayette College*

Discipline: **Economics**

Author/Contributors:
David Markowitz

Abstract Name: **US GAAP versus IFRS: the Impact of Research and Development on Reported Income and Capital Infusions**

The current accounting system used in the US is known as the Generally Accepted Accounting Principles (GAAP), while the vast majority of the remaining countries use the International Financial Reporting Standards (IFRS). One distinguishing factor between the two is the regulations on accounting for research and development (R&D). GAAP states that all R&D expenditures must be expensed, thus decreasing income, while IFRS expenses research but capitalizes development. Capitalization is the process of turning an expense into an asset which decreases over time. This difference causes companies using GAAP to have large immediate increases in expenses, compared to companies using IFRS, which exhibit an increase in assets which decreases over time by turning into expenses. Prior literature has found that capitalization of development found in IFRS is more informative to investors for showing property value. This paper will contribute to literature by exploring the hypothesis that accounting for R&D using GAAP puts US companies at a competitive disadvantage versus international companies using IFRS, pertaining to capital infusions in the forms of stocks, bonds, and loans. In order to test the hypothesis, a panel regression analysis will be conducted on a sample size of 30 companies from 2015-2019 in high R&D focus sectors: automotive, pharmaceutical, and technology hardware. I expect to find a statistically significant causal relationship between GAAP and a decrease in capital infusions in the form of stocks sold. If I am successful in finding this, I will discuss how IFRS system of capitalizing development shows investors a more nuanced presentation of R& D, which also makes R&D more attractive to investors. If such a relationship is not found, I will discuss potential reasons for this, including issues with the statistical test and the efficient market hypothesis.

Marks, Sydney

Institution: *IA - Iowa State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Sydney Marks

Abstract Name: **The Characterization of Unknown Black Yeasts**

Multiple unidentified black yeasts were investigated with the use of using molecular and culture-based approaches in an effort to determine the identity of the fungi as well as their potential applications. Using PCR, extracted DNA from the fungi was amplified and ITS sequence regions were sequenced. The preliminary results show that the closest matches for these fungi are Exophiala sideris and Exophiala viscosa. Gel electrophoresis was performed in order to confirm that there was no contamination in the samples before sequencing. The broader clade that these species belong to produces melanin. Melanin is a costly molecule to produce artificially. There has been an industrial application for extracting the melanin from similar fungi, which could also be a potential application for the fungi under investigation. For industrial applications, it is important to determine how the fungi will be grown which is why phenotyping and carbon source utilization was performed. Phenotyping was done by testing whether the fungi would grow on a variety of media types to see broadly what nutrients, as well as the amount of nutrients, the fungi were capable of utilizing. To determine specific compounds that the fungi are able to utilize, c-strips were used to determine the usable specific carbon sources for these fungi. Both of these methods for determining how to grow these fungi also allowed for potential changes in growth time, melanin production, appearance, and other factors to be observed with differing carbon containing molecules.

Marolf, Lauren

Institution: *FL - The University of Tampa*

Discipline: **International Studies**

Author/Contributors:
Lauren Marolf

Abstract Name: **Cybersecurity Network Analysis for Spacefaring Nations**

Analyzing relational patterns between spacefaring nations provides insight into how individual countries can improve their security and how the international system can increase in stability. Fifteen of eighty satellite-owning countries currently possess capabilities to launch satellites into orbit. This results in bilateral country relationships between owner and launcher as satellites are transferred from one country to another country. In this paper I use network analysis to map how bilateral owner-launcher relationships and the cybersecurity scores of those actors coalesce to influence international system dynamics, such as dependency. Other core concepts used to analyze the network include centrality, density, and structural equivalence. The network analysis methodology emphasizes how material and social relationships relate to each other - as satellite transfers and cybersecurity scores are the evaluated materials, the links drawn between state-nodes reveal the social relationships at play. The International Telecommunication Union's Global Cybersecurity Index measures state cybersecurity commitments across five pillars: legal measures, technical measures, organizational measures, capacity development measures, and cooperation measures. As country-nodes are clustered into groups with cybersecurity scores of 0-5, 5-10, 10-15, and 15-20, I find that organizational, cooperation, and capacity factors help explain dependencies within the model. Where densely connected subnetworks have low flexibility and low dependency, sparsely connected subnetworks have high flexibility and high dependency. The network analysis presented in this paper offers a means of addressing current interdependence and flows of influence among states with satellites in orbit. For future analyses of structural holes, an international framework is proposed.

Marsh, Benjamin

Institution: ***FL - The University of Tampa***

Discipline: Psychology/Neuroscience

Author/Contributors:
Jennifer Martin,
Marna Stillman,
Benjamin Marsh

Abstract Name: Race Based Memory Errors in the Cross Race Effect When Remembering a Narrative

Two experiments analyze how a narrative and its protagonist are remembered depending on the participants' race. The cross-race effect (CRE), a phenomenon where individuals have poorer memory for faces outside of ones' race compared to faces within their race, was examined. It was hypothesized that White participants would experience more race-based errors when the protagonist was a Black male in comparison to a White male. Also, White participants would be more likely to confuse the Black protagonist with other Black characters. Black participants (experiment 1 only) and White participants were given a short narrative about a male protagonist, Jackie. Four faces would appear: Jackie and the loiter, who alternated being Black and White, and the cashier and server, who were both White females in experiment 1, but Black or White females in experiment 2. After reading the narrative, the participants responded to a series of questions to test their memory of events and character faces. In both experiments, findings suggest that White participants had a higher rate of race-based memory error when presented with Black Jackie than White Jackie. The results suggest that patterns are used to aid in filling in memory gaps and those patterns can be related to racial expectations. Additionally, White participants, in experiment 1 and 2, misidentified Jackie the most when he and the loiter were both Black. In contrast, Black participants misidentified Jackie the most when both he and the loiter were White. In short, the CRE was supported in both experiments and in Black and White participants. Implications are that race and culture may influence the way we remember and misremember details of an event.

Marsh, Rebekah

Institution: ***AL - Samford University***

Discipline: Biology

Author/Contributors:
Rebekah Marsh

Abstract Name: Patriarchal Beliefs Influence on Christian Women's Pursuit of Career Leadership and Education

One major variable Christian women are influenced by is patriarchal beliefs, and these can have an impact on her educational and career leadership opportunities. Although both variables seem to be related, there is not a lot of research about the correlation between the two. Through previous research, we know that many societal, religious, and environmental pressures surround the belief system that many Christian women seek to uphold. This paper investigates whether there is a significant relationship between a Christian woman's patriarchal beliefs and her pursuit of career leadership and educational opportunities. To understand whether there is a significant relationship between these variables, I surveyed Christian women using the Attitudes Toward Christian Women Scale (ACWS) and the Leadership And Achievement Scale (LAAS). My survey results demonstrate a significant relationship between patriarchal beliefs and Christian women's leadership in career aspirations, as well as a significant relationship between patriarchal beliefs and education aspirations. The results of each survey also reflected a major negative correlation with each other, therefore proving that my hypothesis was correct. This study shows how important it is for family scientists, family life educators, family therapists, and policy makers to understand the mindset that many Christian women have, so that they can better help them within their respective careers. Additionally, the result of this study validates Christian women who possess both patriarchal beliefs and desire to hold a leadership position in their careers or pursue higher education and feel that they struggle to bridge the gap between these two factors. Furthermore, this study informs Christian institutions and organizations that desire to develop career leadership or education programs specifically for women. Understanding why many Christian women may struggle to make decisions in favor of their career or their education will help these organizations and institutions develop more effective programs.

Marshall, Madison

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Madison Marshall,
Anne Osano

Abstract Name: **Diversity of Endophytes in Sunn Hemp (Crotalaria junicea)**

DIVERSITY OF ENDOPHYTES IN SUNN HEMP (Crotalaria junicea)Sunn hemp commonly known as Mito,is a very important indigenous vegetable in Kenya. It also fixes nitrogen, good green manure, reduces soil erosion, conserve soil moisture, suppress weeds and nematodes, and recycle plant nutrients. It grows at fast rate in sub-tropical and tropical climates and its stem is used in industrial production of fiber. The crop is plagued with numerous biotic and abiotic stresses that can be solved by inoculation of endophytes. The objective of this study was to identify endophytes associated with sunn hemp and profile their functions.The healthy vegetables were randomly collected from vegetable farmers in Vihiga count, Kenya. Bacterial and fungal endophytes were isolated on nutrient agar (NA), and Potato Dextrose Agar (PDA) media supplemented with antibiotic, respectively. Pikovskayas media was used to test for phosphorous solubilization efficiency (PSE) while Jensen's media was used to test nitrogen fixation. Total of 31 bacteria and 22 fungal endophytes were isolated from the plant.Aspergillus sppwas the most dominant fungal endophyte isolated with the highest PSE of 11.84%. 58.83% of the bacterial endophytes fixed nitrogen while 1.87% fungal endophytes were able to solubilize phosphates. The endophytes found to enhance plant growth promoting traits will be recommended for inoculation on seed or incorporated in soil to improve crop productivity. More research will be done on the other endophytes to establish their role in terms of pest, disease or drought resistance. The research was completed over the summer at Egerton University in Njoro, Kenya under the supervision of Dr. Anne Osano of Bowie State Universityand Joseph Mafurahof Egerton, with assistance from Mary Simiyu.

Marshall, Marissa

Institution: *TX - San Jacinto College*

Discipline: Education

Author/Contributors:
Elizabeth Arriaga,
Marissa Marshall,
Isabel Santos

Abstract Name: **Gun Violence in Schools**

Gun violence has become a huge problem, especially when it comes to our schools. Just this year, as of October 31, 2022, there have been forty school shootings, twenty-eight of the victims were students and the other six were staff members. According to SIERP (Stanford Institute for economic policy Research) more than a hundred thousand students between 2018-2019 were involved in school shootings. School shootings have a major effect on students' mental health, academic performance, and enrollment ((Dodson, 2021,). School should be a place where children want to go to learn, make new friends, and a place where they can feel safe and secure. Sensible Gun laws need to be implemented in addition to school based interventions that address problems before shootings occur. One solution that has been tossed around and will not help this situation is arming teachers with guns. This literature review looks at the effects and impact of gun violence on students and offers some research-based approaches for creating safer schools and communities (McMillan, Jordan; Bernstein, 2022),

Martin, Christian

Institution: *FL - Miami Dade College*

Discipline: Mathematics

Author/Contributors:
Christian Martin

Abstract Name: **Adjusting the mathematical model of harmonic motion to variable mass**

Simple harmonic motion is a particular sort of periodic motion that describes a sinusoidalcurve that deviates from a horizontal line which is the equilibrium position of the motion. In this research we focus on the simple harmonic motion generated by a mass on a vertical spring, which can be described, by virtue of Hooke's law, by means of a second-order differential equation whose unknown function is the elongation x=x(t) considered as a function of time: mx''+ kx = 0, where kis theelasticity constant of the spring. The specific problem that we address in our study is that of adjusting the mathematical model when the mass m is considered to change with time,i.e., m=m(t). This simple consideration significantly complicates the problem from both the theoreticaland practical points of views. Thus, we focus on computing and analyzingthe behavior of the exact solution to the differential equation above for several elementary paradigms of the mass function. Other examples of mass function are constructed by observing the change of mass of a perforated container of sand or water. For the latter, we rely on numerical methods such as Finite Difference and Runge Kutta to compute an approximate solution to the problem. In all cases, we consider that the mass decreases with time, and we observe that the equilibrium position is described by a nonlinear curve that also decreases with time, while the elongation is the sum of two functions where at least one of them is proportional to a wave.

Martin, Emily

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Kathryn Hamilton,
Tomiyah Alcantar,
Emily Martin

Abstract Name: **Male Participation in Parent Education**

The student researchers seek to create an environment that motivates fathersto attendparent education courses by exploring the factors involved in the participation of males in parent education. The student researchers targeted a sample size of 78 fathers while utilizing a mixed methodology survey with an emphasis on quantitative. The students distributed this survey through online platforms and local grocery stores. The student researchers collected data during a three-week-long period. The survey contained five demographic questions regarding age, race/ethnicity, marital status, number of female children, and number of male children. The majority of respondents were ages 41 to 50, (28.2%; n=22), 20.5% (n=16) were ages 31 to 40, 16.7% (n=13) were ages 20 to 30, 12.8% (n=10) were ages 51 to 60, 10.3% (n=8) were ages 61 to 70, 7.7% (n=6) were ages 71 to 80, and 2.6% (n=2) were 81 to 90 years of age. Regarding race/ethnicity 85.4% (n=51) of respondents were White/Caucasian, 28.2% (n=22) were Hispanic, 2.6% (n=2) were American Indian/Alaskan Native, 2.6% (n=2) were Black/African American, and 1.3% (n=1) were Asian/Pacific Islander.The student researchers created a code sheet using Google sheets, which consisted of converting the survey questions into a code. The student researchers used the Statistical Package for Social Sciences (SPSS) to analyze data collected. The student researchers utilized the Hahn's Coding Process to analyze the qualitative data. The themes: Work, Family, Time, and Disability consist of responses that reveal obstacles within the father'slives that would interfere with their attendance toparent education classes. Conducting this research provides information to include programs specifically for males to become more involved in parent education.By gaining insight from fathers in the community, the researchers will brainstorm ideas on how to make it easier for fathers to be able to attend parent education classes.

Martin, Kate

Institution: *AZ - Northern Arizona University*

Discipline: Education

Author/Contributors:
Kate Martin

Abstract Name: **The Gender Gap in Refugee Education: Analyzing the Existing Research on the Shortage of Women Teachers in Refugee Classrooms**

As of 2019, the United Nations High Commissioner for Refugees (UNHCR)identified only 27% of all refugee children enrolled in school as female due to several barriers they face, including social and cultural limitations such as unwilling parents, unsafe journeys to the classroom, and a lack of girl-friendly facilities. One major barrier suggests that a shortage of female teachers could be a larger factor affecting the gender gap in education. If more female teachers were present in the classroom, they would serve as a role model, help girls to feel safer inside the classroom, and help break down social-cultural barriers for all women and girls. Much of the existing literature is limited and heavily anecdotal-based meaning that there is a need for more research both quantitatively and qualitatively that addresses specific characteristics of refugee teachers. This project consisted of a literature study of 48 sources beginning in 2005 through 2022 which identified a direct relationship between the presence of a female teacher and higher test scores, subject appreciation, and motivation of female students in refugee classrooms. The findings of this study also identify four main areas of future research to help close the gender gap in refugee education:allow female refugees to finish their education before becoming teachers, revise teacher training programs to be more tailored to women's needs, create a strategy to diversify the employment of women across urban and rural camps, and redesign learning materials to be inclusive of both female teachers and students.

martinez, Christian

Institution: *IA - Iowa State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Christian Martinez,
Rupsa Roy,
Beena Ajmera

Abstract Name: **Numerical Study of the Effect of Rainfall on Partly Saturated Compacted Clay Slopes**

Global warming has increased the total annual precipitation received in a single day globally. Heavy rainfall and earthquakes have been found to be one of the major factors causing 'mass wasting'. The most recent case of rainfall induced landslides, in the US, is the Yellowstone National Park that was closed due to flooding and landslides caused by incessant rainfall. These events have been known to contribute to major loss of life and property. In this research, the effect of rainfall on partially saturated compacted clay slopes is studied numerically. Matric suction in the soil contributes to shear strength of unsaturated soil. Rainwater infiltration into the soil reduces the matric suction and develops positive pore pressure in the soil decreasingthe shear strength of the soil causing slope instability. In this study, numerical analyses of three small-scale experimental models of slopes studied experimentally previously at California State University, Fullerton were conducted. Coupled pore pressure and stress analysis of slope models at void ratios of 0.89, 1.0, and 1.2 with slope inclination at 40 degrees, subjected to a rainfall intensity of 1.68 cm/hour is studied. The study focusses on understanding the relation between rainfall duration and intensity on the seepage velocity, time taken by the slope to completely saturate, and the deformations occurring in the slope during the process of saturation for varying void ratios. In this study it was found that the seepage velocity increased with an increase in the void ratio of the soil while the time taken by the slope to saturate and the swell in the crown of the slope was found to decrease. The finite element model results were found to be in good accordance with experimental results. In the future we plan to conduct slope stability analysis on these numerical models to accurately predict slope failures.

martinez, Emelyn

Institution: *GA - Kennesaw State University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Treasure Evans *Emelyn Martinez* *Alexa Brown*
Ayanna Butler *Quinn Mckeever*

Abstract Name: **Spirituality as a Buffer Between Traumatic Experience and Posttraumatic Stress**

According to the American Psychiatric Association, trauma can be defined as exposure to actual or threatened death, serious injury, or sexual violence, involving direct exposure, etc. As a result of experiencing trauma or a traumatic event, it can lead to symptoms consistent with a formal diagnosis of PTSD. PTSD can then arise from stressful events or situations “of exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone” (WHO, 2016). Anxiety buffer disruption theory (ABDT) suggests that posttraumatic stress disorder (PTSD) is a result of the disruption of one’s anxiety-buffering mechanisms. This disruption can lead to overwhelming emotions, hyperawareness of one’s mortality, and wide-ranging reactions to traumatic events. However, the anxiety-buffer system mitigates the effects of potential terror, promotes posttraumatic growth (PTG), and is comprised of three components: cultural worldviews (e.g., spirituality), self-esteem, and social support. In some cases, depending upon the threshold of the PTSD, traumatic experiences can lead to one experiencing a spiritual awakening. A spiritual awakening is a term given to describe a subjective experience in which an individual’s ego transcends their ordinary, finite sense of self to encompass a wider, infinite sense of truth or reality (James, 1902/1985). Moreso, it has been seen recently within research that although trauma has been experienced there is still a relatively low prevalence of PTSD in some due to “natural resilience”, often related to a survivor’s spiritual resources (Feurerstein, 1989; McClintock et al., 2016). A sample of N=300 individuals with above-threshold PTSD symptomology (PCL-5 scores > 34) will be recruited via a research panel to examine the relationship between spirituality, PTSD symptoms, and posttraumatic growth. Thus, we expect that individuals who have experienced a traumatic event and who report higher spirituality will report lower PTSD symptoms and exhibit higher posttraumatic growth.

martinez, Giovanni

Institution: *CA - California State University - Fullerton*

Discipline: Computer Science/Information Systems

Author/Contributors:
Giovanni Martinez *Seena Mohajeran* *Khang Pham*

Abstract Name: **Titan Providence: Autonomous Drone System utilizing AI and GPS for Navigation**

Data and analysis of information have become a crucial aspect of society’s current development, allowing accurate awareness of our environments, and benefitting maintenance, safety, and overall innovation. At the same time, the big data trend has grown in popularity, and the use of drones has also taken off to be considered valuable data collection devices. However, the control of the drone always lies with the pilot who uses visual tracking to determine its position and orientation. To overcome these issues, we propose an advanced technology that allows a drone to autonomously fly with little to no input from a human pilot. Differing from common Unmanned Aerial Vehicle (UAV) systems, Titan Providence implements AI vision with a GPS system, allowing for fully autonomous completion of a given “mission”. Our objectives for this project include the construction and design of the drone framework, adaptive pathfinding, and awareness, in addition to task assignments.To achieve our goals, we integrated a Raspberry Pi with a compatible flight control module with additional telemetry and peripherals docked on a custom quadcopter chassis that allows modularity and expansions in accordance with a task’s outline and requirements. By using these two systems in conjunction, we passively maintain the stability of the system through its inertial measurement unit (IMU) and individual multirotor electronic speed controllers (ESC), allowing further independence of the system’s microcomputer. Regarding autonomy, the Raspberry Pi hosts the machine learning platform known as Tensorflow lite which would allow the drone to recognize obstacles and relay this information to the flight computer to avoid them. We also plan to utilize OSMNx which would allow the drone to create routes through urban environments where extra care and consideration for the law, powerlines, and private property is needed.

martinez, Inigo

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Business

Author/Contributors:
Karlyn Merbach *Inigo Martinez* *Gaurav Bansal*
Zhuoli Axelton

Abstract Name: **Does the CIO's Gender matter more than her Expertise and Leadership Style in affecting IT security policy compliance?**

Information security threats have become a major concern for organizational leadership. Research suggests that IT leadership is vital in influencing employees' IT security compliance with security policy; however, there is little research measuring the role of the CIO's gender in influencing employees toward IT security compliance. The IT field has progressed, and there are more women CIOs now, but women leaders are still a minority in IT. According to a Pew Research report published in 2018, societal role expectations and barriers have discouraged women from going into the IT domain. Barriers to learning and advancing in IT careers have also hampered women's self-confidence to pursue careers in this industry. Thus, perceived credibility or IT expertise becomes another serious challenge women IT leaders face.While it is known that women leaders are more transformational than transactional, men, in contrast, are known to follow a transactional leadership style in general. Prior studies provide overwhelming evidence that the transformational leadership style is more effective in influencing behavior change and positively related to team and organization performance.Thus, this paper seeks to understand the role of CIO gender, perceived IT expertise, and leadership style in influencing employees' behavior change and intention to comply with cyber-security recommendations. The 2x2x2 controlled experiment uses various vignettes in Qualtrics to manipulate gender, IT expertise (low/ high), and leadership style (transactional/ transformational). Data will be collected from all over the US using MTurk during December 2022 and analyzed during January 2023. The findings of the study will have theoretical and practical implications. It will help inform IT literature on the role of the security message sender's characteristics and the contextual outcomes; on the other hand, they will guide CIOs, particularly women, on how they can tailor their leadership style and security recommendations to achieve greater behavior change.

martinez, Lilibeth

Institution: *CA - California State University - Fullerton*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lilibeth Martinez,
Kareem Torres,
Paul Tablada,
Ella Ben-Hagai,
Kaiulani Gonzales

Abstract Name: **Comparing Trajectories Toward Activism Amongst Asian American and Latinx Young Adults**

Following the murder of George Floyd, the Black Lives Matter movement inspired an increased awareness of social injustices and racism in America. In this research, we examine how the anti-racism movement that followed this historical event impacted Latinx and Asian American young adults and their social activism. We conducted in-depth interviews with Asian American (n=12) and Latinx (n=12) emerging adults who identified as activists. Utilizing Interpretive Phenomenological Analysis we examined recurring themes in participants' life stories that explained their involvement in activism. We found that both Asian and Latinx participants were motivated to join political-cultural heritage organizations to bridge and integrate their American and ethnic cultural identities. Prejudice against the Latinx community motivated Latinx participants to become involved in cultural-political organizations in comparison to Asian American involvement in organizations alike, which led to an increased awareness of anti-Asian racism. The rise of the Black Lives Matter movement motivated Asian American activists to advocate against Asian discrimination. In contrast, the Latinx participants were more motivated towards coalitional activism for people of color, specifically Black and Brown. This research illuminates the similarities and differences in trajectories toward activism for Latinx and Asian American young adults.

martinez, Sophia

Institution: *MN - Gustavus Adolphus College*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Sophia Martinez

Abstract Name: **Lina Sandell and the Hymnody of the Evangelical Covenant Church**

The hymnody of Protestant Christian traditions in America has long been researched, reflected on, and loved by those who are a part of those traditions. Hymnody encompasses hymn writing, hymn singing, and the specific hymns of a time, place, or church. The hymnody of the Evangelical Covenant Churchis no exception to research interest.The Evangelical Covenant Church is a prominent example of a Protestant denomination in America whose hymns merit renewed research interest. The purpose of this project is to provide a history of the theology of the Covenant Church, and of the Church itself, through the lens of hymnody. The focus of this project is especially on the hymns of Lina Sandell (1832-1903), a prominent Swedish hymn writer. Sandell here acts as an access point to Covenant theology as well as Church history. The hymnals of the Evangelical Covenant Church, especially those of 1950, 1973, and 1996, will be central to a study of the relation between Sandell's hymns and the Church over time. A study of Sandell's hymnody tells the story of the theological and historical evolution of the Covenant Church, as well as of Protestant Christianity in America more generally. The consistent inclusion – and exclusion – of Sandell hymns across editions of the Evangelical Covenant Church hymnal, spanning nearly 100 years, provides insight about the theological concepts most valued throughout the Church's history. Thus, one woman's personal theology gives invaluable insight into the Covenant as a whole both at its beginning and in its current state. The position taken by this thesis is that Sandell hymns, since they are widely recognized as central to Covenant hymnody, have provided a kind of theological snapshot of what the Church has valued the most - or differently - at various points throughout its history.

Martinez Jr, Pedro

Institution: *IA - Wartburg College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Pedro Martinez Jr *Daniel Ng* *Hacene Serrai*
Mark Whiting

Abstract Name: **Enlarged Perivascular Spaces in Patients with Mild Traumatic Brain Injury: Characterization with 7T MRI and Relationship with Neurobehavioral Outcome**

Mild traumatic brain injury (mTBI) is a growing epidemic caused by blunt force trauma or sudden acceleration and deceleration to the head. This sudden impact of trauma has been found to create implications for the waste-removing function of the glymphatic system. In this study, we examined the development of enlarged perivascular spaces (ePVS), a biomarker of glymphatic function, during the acute, 30-day, and 90-day post-injury periods using 7T MRI. Imaging sequences included T2*, MP2RAGE, T2 FLAIR, SWI, and SPACE. mTBI participants at each of the post-injury time periods completed the Neurobehavioral Symptom Inventory (NSI) and the Pittsburgh Sleep Quality Index (PSQI) assessments to identify their neurobehavioral symptoms and sleeping patterns during the post-injury period. The ePVS were identified and the burden severity was rated for each hemisphere. When scored, 83% of the healthy individuals were rated as being "none" or "mild" while 78% of mTBI participants were rated as being "moderate", "frequent", or "severe". There was a significant difference in ePVS burden in mTBI participants when compared to the healthy controls at the acute time point. Both the total number of ePVS ($t(13) = 2.19$, $p = 0.02$) and the number of linear ePVS ($t(13) = 2.4$, $p = 0.01$) were significantly higher in the mTBI group. Preliminary analysis revealed that mTBI participants had significantly higher NSI scores for cognitive, somatosensory, and affective domains following the post-injury time periods (0.02). There was found to be no significant difference in the number of ePVS between the mTBI participants who were identified as being good or bad quality sleepers under the PSQI ($t(15) = 1.22$, $p = 0.27$). Overall, the greater ePVS burden observed in mTBI participants suggests acute disruption to the brain's waste clearance system following a mTBI.

Martinez Perez, Haidee

Institution: *GA - Georgia College and State University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Isabella Dattilio,
Logan Hall,
Haidee Martinez Perez,
Peter Rosado Flores

Abstract Name: **Synthesis of mesalamine and curcumin capped silver nanoparticles for the treatment of Irritable Bowel Disease (IBD)**

Silver nanoparticles are innovative materials which have found uses in the field of antiseptics and drug delivery systems as of late. The term IBD (Inflammatory Bowel Disease) is used to describe the series of chronic illnesses that are characterized by inflammation of the intestinal track lining. The two main diseases are Ulcerative Colitis (UC) and Crohns' disease (CD). One (UC) affects mainly the entirety of the colon while the other (CD) affects the entirety of the digestive system (from mouth to anus). To aid in the remission of an inflamed bowel, 5-ASAs (Mesalamine, balzalaside etc.) and curcumin are beneficial, alongside corticosteroids (prednisone) and biologics (Adalimumab and Infliximab). 5-ASAs (Mesalamine) are used to halt and avert flare-ups within the digestive tract while steroids and natural supplements such as curcumin, assist in the management of inflammatory and oxidative conditions. An effective synthesis of silver nanoparticles involves the use of silver nitrate, a capping agent (such as mercaptosuccinic acid) and a strong reducer (such as sodium borohydride). The two experiments were conducted while studying pH changes at each step. Then, UV-Vis was applied to verify the appearance of the nanoparticles. Signals around the 350-400 nm area confirmed the presence of silver nanoparticles in the two experiments. This work explores conditions that are used to synthesize these nanoparticles, that could be beneficial someday, in the delivery of therapeutic agents straight to intestinal lesions in the colon or digestive track.

Marzan, Maisha

Institution: *IL - North Central College*

Discipline: **Biology**

Author/Contributors:
Maisha Marzan

Abstract Name: **Multihost pathogen creates ecological links between its hosts and thus influence host population dynamics.**

Pathogens that infect multiple species are crucial because they create ecological links between species, even if those species do not directly interact. To understand how multihost-pathogens influence disease transmission dynamics in a multi-host system, we mathematically and computationally model this system, with one common pathogen (Saprolegnia) and multiple hosts, including hosts that are saprobic and tolerant to the shared pathogen. Saprolegnia is an aquatic microbe that can live outside of its hosts; thus, we consider an environmental pool can infect multiple host species living in the same body of water. Host species can indirectly have negative effects on each other by amplifying the number of pathogen infective propagules. Our focal host is the American Bullfrog (Lithobates catesbeianus). Saprolegnia infects the eggs of the frogs and also infects pathogenically and saprophytically other hosts in the same pond. We have completed a mathematical model for the system using a four differential equations system of the Susceptible, Infected, Dead, and Pathogen populations.

Masaki, Ayumu

Institution: ***JPN - Musashino University***

Discipline: **Mathematics**

Author/Contributors:
Ayumu Masaki,
Haruhito Abe

Abstract Name: **Optimization of Scheduling Problems on Runways**

Purpose Currently, aircraft delays at airports are eliminated primarily through management by the control tower. Moreover, the Fukuoka Airport is designated as a congested airportwhere air demand greatly exceeds the airport facility capacity.In this paper, we express the creation of the take-off and landing schedules for multiple aircraft at the Fukuoka Airport using mathematical formulas. We developed an algorithm that mechanically resolves delays that occur owing to various reasons, such as weather conditions or delays in the arrival of the next aircraft to be used. In addition, a systematic aircraft arrival order is considered to reduce airline and passenger frustrations (We call this condition (1)). We plan to allow the two aircraft of All Nippon Airways Co., Ltd. and Japan Airlines Co., Ltd. to alternately use the runway as much as possible.Method First, we investigated the current usage of each aircraft and usage conditions at the Fukuoka Airport. Based on this information, the problem of minimizing the scheduled flight time delays of each aircraft, when delays occur, was expressed in mathematical formulas using a method called mixed integer programming, while considering various physical constraints. Furthermore, we expressed the equality in aircraft order using a mathematical formula. The formulas created were calculated numerically using the program. Based on the output results, the timetable was corrected to manage delays.Results By taking the above constraints into account, we were able to calculate a new timetable that improved upon the existing timetable at Fukuoka Airport. When focusing on the 30 minute timetable, the order of the aircraft, without the constraint condition (1), there was an inequity of about 10 minutes. However, with the new timetable with the constraint condition (1) added, the unfairness of the order of aircraft was eliminated.

Massey, Jessica

Institution: ***OK - Southwestern Oklahoma State University***

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jessica Massey,
Jeremy Evert

Abstract Name: **Validation Study of Finite Element Analysis in Aerospace Applications**

Computer-aided design, also known as CAD, has been used to make and design many everyday items used in society, from laundry detergent bottles to heart valves. Finite Element Analysis, known as FEA, is a specific kind of CAD that focuses on simulating how stress and strain can affect the observed part. FEA is valuable when creating simulations, testing materials, looking at constraints and loads, and interpreting the results being simulated. An FEA study can perform different kinds of simulations such as static stress, model frequency, thermal stress, structural buckling, and event simulations just to name a few. This is a validation study with thepurpose of demonstrating the ease of use of FEA software and the repeatability of results. Researchsuggests that FEA is still valid in modernsociety. In this document, we revisit a previous publication onFEA applications in aerospace. Modern tools are used to perform analysis of fasteners and materials common in airframe construction. The previous publication used the ANSYS FE package. Our validation study uses Fusion 360 by Autodesk, which has interoperability with ANSYS.Our data suggest that modern software provides similar results to the previously published work. Unlike previous studies published by doctorial researchers, this publication suggeststhat FEA for aerospace applications can be performed by an undergraduate student. Our research providesnew data about the personnel hours requiredto set up the simulations, the equipment used to run the simulations, as well as how long the simulations took to complete. To show the modern applicability and ease of use of FEA we show the results from a similar analysis run in support of the SWOSU NASA Rover Dawgs competition rover.

Mast, Olivia

Institution: *PA - Juniata College*

Discipline: Communication/Journalism

Author/Contributors:
Olivia Mast

Abstract Name: **#FakeBody: Studying How Different TikTok Categories Affect Viewers' Body Image**

Issues with body image are not a new phenomenon in the United States, nor are the media reflecting them. However, what is new is the way that social media platforms change one's perception of themselves, and therefore their body acceptance and disturbance levels. Social comparison theory argues that media can impact one's body perception since the person compares themselves to the people in the media. With different forms of social media there are different effects on a person's body perception. This research is an experiment to determine how TikTok impacts a person's body image. Participants are adolescents aged 18-25 who identify as "female aligned." Participants are found on the Juniata College campus and reached out via personal connections and online postings. In this experiment, there are three different groupings of participants. Each group receives a survey at the beginning and ending of the experiment and then shown different categories of TikTok videos (fitness, body positive, and non-body related). By doing this, the data is run to see the changes in body image perception after watching the different content. Social media is nuanced, and it would be incorrect to say that all social media has a negative effect. Instead, we must investigate where we spend our time online and how that impacts us personally. In media platforms like TikTok, the For You algorithm is set to show videos of content they have previously liked, but the algorithm is imperfect. My research sets a precedent of what types of TikTok videos affect body image and can be used to further research on what specific media have a greater impact on body image.

Mastel, Isaac

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Isaac Mastel

Abstract Name: **Development of a Graphene-Based Microelectronic Device**

In recent years, advancements in nanoscale carbon have led to an explosion of research and development on possible applications of graphene. Specifically, the electrical properties of graphene make it desirable for flexible devices, energy storage, and general computing applications. One of the most common ways to acquire graphene is through chemical vapor deposition (CVD), where a metal substrate is exposed to methane gas at high temperatures leaving a layer of carbon (graphene) behind. This project's goal is to use CVD graphene in combination with a silicon and gold substrate to create a microelectronic device that functions as a rudimentary transistor. So far, CVD graphene has been retrieved from the copper foil substrate using an Fe3Cl bath and channels have been etched into a SiO2 wafer using photoresist pattern transfer and NH4F etchant. Both the graphene and the channels in the SiO2 wafer have been characterized by white light and atomic force microscopy. The goal is to deposit gold within the etched channels, lay the graphene across them, and test for conductivity from one channel, through the graphene, and into another channel. To achieve this, chromium (for adherence) then gold will be applied to the SiO2 wafer through physical vapor deposition. The deposited metal will be polished until it only remains within the channels. Finally, the graphene will be laid across the channels and the assembled component will be tested for continuity between channels connected by the graphene sheet. Contingent on size optimization, it may be possible to create a transistor using graphene which performs the same functions as traditional semiconductors but with more desirable efficiency and thermal performance. This would allow for smaller, more energy efficient computing devices in a world where efficient, clean production and use of energy is a top priority.

Mastropolo, Jenna

Institution: *NC - High Point University*

Discipline: Physics/Astronomy

Author/Contributors:
Jenna Mastropolo,
Briana Fiser,
Jacob Brooks

Abstract Name: **Effects of Substrate Stiffness on Bacterial Biofilm Growth**

When bacteria settle onsurfaces, they can build up and form biofilms, which are groups of bacterial cells that are irreversibly attached to the surface. Biofilms have the potential to form on indwelling medical devices such as catheters and may eventually lead to bloodstream infections. In the United States, an estimated 250,000-400,000 catheter-related bloodstream infections (CLABSIs) occur every year. Researchers are exploring how surface characteristics such as stiffness, physical features, and chemical treatments can affect biofilm growth. We are investigating how varying the stiffness of polydimethylsiloxane (PDMS) substrates affects biofilm growth on the surface, specifically biofilm growth of bacteria such as S. epidermidis and S. aureus, which are commonly found on central venous catheters (CVCs). PDMS is a polymer that crosslinks into a soft solid upon heating, and results will be presented for biofilm growth on three different PDMS elastomers. Studying how different substrate stiffness affects the growth of bacterial biofilms may help provide a cost-effective and simple way to reduce bacterial adhesion on catheters, thereby improving the health of patients.

Mata-Gallegos, Lorenzo

Institution: *WI - University of Wisconsin-River Falls*

Discipline: History

Author/Contributors:
Geoffrey Osterbauer,
Madeline Sticha

Abstract Name: **Teaching The California Genocide**

This presentation covers a nine-day Project-Based Learning unit plan for twelfth graders on the California Native American Genocide of 1846 to 1873. The unit plan sequentially scaffolds the students' learning, allowing them to construct meaning as they interact with content in various learning tasks requiring critical High Order Thinking (Jigsaw activity, research, public presentations, etc.). Along with inculcating virtue to prevent future genocides, the desired outcome of the unit is for students to extrapolate what they know about the California Genocide into the modern day to take a stand as informed citizens on the current Native American reparations debate.

Mathew, Philip

Institution: *MD - University of Maryland College Park*

Discipline: **Business**

Author/Contributors:
Aarushi Malhotra *Joanna Ihm* *Philip Mathew*
Soham Nagaokar *Rachel Antony* *Benjamin Bral*
Seth Gleason *Johnny Rajala* *Daniel Zhu*
Kyle Truong

Abstract Name: **Detecting Bias in Intelligent Autonomous Hiring Systems**

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Mathisen, Blake

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Zach Caterer,
Blake Mathisen,
Mikayla Hady,
Michael Walsh

Abstract Name: **Improving diagnosis of kidney cancer using Infrared Spectroscopic Imaging**

Infrared Spectroscopic Imaging has been shown to be a powerful approach to rapidly image human tissue biopsies to identify biochemical signatures associated with disease outcome. In this study we have applied two types of IR imaging to distinguish between two types of kidney cancer, chromophobe and oncocytoma. These two cancers represent a very difficult problem for the medical community to diagnose as the clinical symptoms are similar and they look almost identical to the experience pathologist. Definitive diagnosis between the two types is critical as the treatment options and prognosis for these two kidney cancers are very different. In this study we demonstrated that tradition IR imaging using a Fourier Transform based approach could allow for excellent objective diagnosis of these cancers. A newer faster laser-based approach which has potentially better applicability for clinical practice also demonstrated classification between the two groups. A comparison of the results between the two imaging tools will be compared and contrasted. Furthermore, we will present some new results about how kidney cancer can be effected by the diabetic status of the patient.

Mathwig, Nicole

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Psychology/Neuroscience

Author/Contributors:
Nicole Mathwig

Abstract Name: Detecting Deception Through Facial Expressions: Using Facial Feature Extraction Methods to Identify Deception Through Video

There is a widely held belief that nonverbal forms of communication serve as reliable cues for detecting deception. Deception is often accompanied by hiding one's true internal states from others. Individuals under stressful circumstances may fail to inhibit their own feelings, causing an involuntary "leakage" of their emotional state through changes in body language or facial expressions. This leads us to believe that two distinct areas of the brain are responsible for voluntary and involuntary movements of the face. A "tug of war" between both systems would allow for quick leakage of facial expressions when an individual engages in deception to conceal emotional states. This study examines whether facial micro-expressions are a reliable means to detect deception with machine learning and feature extraction methods. To date, few studies have examined the accuracy of machine learning when exposed to specific sets of facial expressions, particularly those under involuntary control. Our first goal was to create a new data set of recorded videos to be used with a machine learning model. This data set includes video of participants playing a social deduction video game,Among Us, where participants must convincingly lie to their opponents to win the game. Videos of participants under these conditions were preprocessed with a feature selection method,OpenFace, to extract facial expression data from images and video collected from the study. We then extracted data to classify facial expressions as deceptive or non-deceptive. The results indicate that machine learning, paired with feature extraction methods, can provide additional insights for determining facial expressions involved in deception.

Matsayko, Alex

Institution: ***OK - University of Central Oklahoma***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alex Matsayko *Lauren Peters* *Mohammad Hossan*

Abstract Name: Analysis and Optimization of Polycaprolactone Flow Diverting Stents for Treatment of Brain Aneurysms

Bioresorbable, flow-diverting stents (FDS) have great potential to reduce the risk associated with non-degradable metallic FDS such as late thrombosis and re-stenosis in the endovascular treatment of intracranial aneurysms. Recently, we developed a polycaprolactone (PCL) bioresorbable, non-braided FDS using a noble, in-house fabrication unit. Due to inconsistencies in temperature from available machines, a kiln was designed and made from a vacuum-sealed tumbler. The tumbler is exceptional in retaining heat within due to its vacuum layer. Heat is supplied inside the tumbler through a ceramic heater that is wired to a power supply. The ceramic heater is attached to a heatsink via thermal adhesive and a fan is placed below to allow for convection. A thermistor located inside the tumbler reads the temperature and sends the information to an Arduino. The Arduino controls a relay that turns the ceramic heater on and off in order to regulate the temperature to the set threshold of 55°C. Heat treatment of the PCL involves a temperature of 55°C ±1.5°C for a period of four hours. The surface and structural quality of the FDS was evaluated using a scanning electron microscope (SEM) and a 3D profilometer. A UniVert mechanical testing machine (UTM) is used post-treatment to determine differences in material elasticity via longitudinal tensile and perpendicular compression testing. FDS properties and structural integrity were also evaluated and compared post-ejection from the 4 Fr delivery catheter. The biocompatibility of the heat-treated FDS was evaluated through proliferation and adhesion of HUVECs, and lactate dehydrogenase (LDH) cytotoxicity assay with HUVECs. The results showed that heat treatment facilitates an increase in fusion between the layers and surface area of bonding between layers. Upon ejection from the 4 Fr catheter, the FDS better maintains the previous diameter before the FDS was inserted into the catheter, which was previously an issue.

Matsko, Mariya

Institution: ***MI - Wayne State University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Mariya Matsko *Sarah Rogers* *Julia Evanski*,
Leah Gowatch *Shreya Desai* *Amanpreet Bhogal*,
Clara Zundel *Samantha Ely* *Krishnarao Maddipati*,
Jeanne Barcelona *Camryn Kowalski* *Paige Arvidson*,
Hilary Marusak

Abstract Name: Behind the ?Runner?s High?: Effects of Acute Exercise and Meditation on Anxiety and Endocannabinoid Levels in Youth

Background: The beneficial effects of exercise and meditation on mental health are well established. Data in adults and animal models suggest that circulating endocannabinoids (eCBs) are elevated following acute exercise, which may explain beneficial mental health effects (e.g., lowered anxiety). However, no studies to-date have examined the impact of acute exercise or meditation on eCBs in youth. This is important because anxiety and other mental health problems typically begin during childhood and adolescence, which coincides with developmental changes in eCB signaling. This randomized controlled trial study compared effects of a 30-min (1) moderate-intensity treadmill, (2) light-intensity stretching, or (3) seated meditation session on state anxiety and circulating eCB concentrations in youth. Methods: Data were collected from 25 youth in an ongoing study (52% female, M=12.92±2.18 years). State anxiety and eCB concentrations were measured before and after randomization into one of the three conditions: treadmill exercise (N=12), stretching (N=9) or meditation (N=4). Results: There was a significant decrease in anxiety scores from before to after the 30-minute session (0.001, d=0.79), regardless of condition. There were no significant main effects of condition, nor significant time by intervention interaction on anxiety scores (p>0.05). Participants exhibited higher pre-to-post concentrations of the eCB anandamide following the treadmill condition; however, these effects did not reach statistical significance (p>0.05).Discussion:Our results demonstrate that acute exercise of both light and moderate intensity, as well as meditation, are associated with reductions in state anxiety in youth. Although not significant, preliminary analyses suggest that moderate-intensity exercise is associated with elevations in circulating eCBs.

Matta, Shriya

Institution: ***NY - Siena College***

Discipline: Public Health

Author/Contributors:
Shriya Matta,
Aaminah Afzal,
Anum Tehseen

Abstract Name: Food As Medicine Program Analysis

The relationship one has with food is directly correlated with one's health. Our current health system has a severe issue with individuals with chronic illnesses who face issues of affordability and accessibility to food. This has led food pantries across the country to develop food as medicine programs which can consist of medically tailored meals, medically tailored packages, and nutritious food referrals. Ultimately, the goal of these food intervention programs is to help create a better lifestyle and improve the health of individuals with food insecurity and chronic illnesses. This presentation will focus on an analysis of the Food as Medicine program at the Food Pantries for the Capital District. Our hypothesis is that Food as Medicine intervention programs improve the health of individuals with chronic illnesses which is evident through the changes in their A1C levels, BMI, number of hospitalizations, and blood pressure.

Mattana, Giulia

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Calla Dexheimer *Giulia Mattana* *Dylan Berry*

Abstract Name: A Computer-Based Model to Capture Gastric Electrophysiology Through Bio-Impedance Analysis

The ability to monitor the bioelectrical activity of the gastrointestinal tract, in a non-invasive manner is essential for the diagnosis and management of functional gastrointestinal disorders. Electrical bio-impedance (Bio-Z) analysis is a promising method to acquire a wide range of human electrophysiological activities, through wearable electrodes. The Bio-Z sensing system consists of a four-electrode configuration on the body surface in which the two outer electrodes deliver a sinusoidal excitation signal transcutaneously, and the two inner electrodes acquire a differential potential which will be conditioned, processed, and mapped to the electrophysiology of interest.To this end, we developed a computer-based model of the human gastric system in COMSOL Multiphysics, a simulation platform based on the finite element method. Through the model, we simulated the Bio-Z analysis to capture the gastric electrophysiology, through the body surface. The objective of the project is to simulate the penetration depth of the Bio-Z analysis as a function of frequency and find the optimum frequency for the clinical data collection on human subjects. We developed the model of the abdomen through four layers of skin, fat, muscle, and peritoneum. Besides, we developed the model of the gastrointestinal tract through four layers of serosa, muscularis, submucosa, and mucosa. The model of four AgCl electrodes was added to the model of biological layers, too. The frequency-dependent permittivity and conductivity parameters were assigned to each biological layer for the simulation at each Bio-Z frequency. In COMSOL, we generated the electric fields resulting from the applied sinusoidal excitation signals at various frequencies in the range of 10 kHz to 250 kHz to the stomach, transcutaneously. Then, we plotted the power spectrums of the electric fields and compared them at the penetration level of the gastric tract.

Mattern, Karl

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Psychology/Neuroscience

Author/Contributors:
Karl Mattern *James Moyer* *Brendan Natwora*
Miranda Massman *Ian Morley*

Abstract Name: Oxygen-glucose Deprivation Models Ischemic Cell Death in CA1 Hippocampus

In the United States, every 40 seconds someone suffers from stroke, and every 3.5 minutes someone dies from stroke. It has been shown that CA1 neurons specifically are imperative for retrieval of episodic memory as well as autonoetic consciousness. Areas important for learning and memory are nearly destroyed following ischemia (stroke) over time regain some but not all functionality. Calcium regulation is important for normal functioning of neuronal signaling cascades, but during ischemia too much calcium influx can trigger excitotoxic cell death. Therefore, regulation of intracellular Ca2+ is important for protection against ischemia, and may be useful in developing treatments that reduce ischemic brain damage and preserve cognitive functioning. In order to study the neuroprotective effects of treatment, baseline counts of cell death must be made for comparison. The present study used an in vitro rat brain slice model from 5 adult F344 rats to validate the hypothesis that cells that undergo oxygen-glucose deprivation (OGD) exhibit significantly more cell death than cells that did not undergo OGD. Dorsal hippocampal slices were prepared and subjected to 5 minutes of OGD, and cell death was assayed using the Trypan blue exclusion method. Dead and dying cells take up the Trypan blue while healthy neurons exclude the dye and are left unstained. The number of Trypan blue labeled neurons were then counted using the program ImageJ. The present study shows that just 5-min of OGD models an ischemic attack, resulting in a baseline control that can be used comparatively to examine effects of treatment on cell death. The general aim of this research is to produce a control value of cell death to demonstrate the effectiveness of this model for future neuroprotective research.

Matthews, Benjamin

Institution: ***TN - Middle Tennessee State University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Benjamin Matthews

Abstract Name: Carbonyl Allylation by Allylic Acetates

Carbonyls are important centers of reactivity in Organic Chemistry. They react readily with electron-rich compounds to make carbon-carbon bonds. One common reaction is allylation, in which a carbon next to an alkene is added to the carbonyl. While many allyl groups can be used, allylic halides are the most common. Unfortunately, they are not very stable and, in most cases, must be synthesized immediately before use. Allylic acetates are much more stable and can be easily prepared and stored from highly stable allylic alcohols, but their use in allylation chemistry has not been well studied. My work explores their use in a nickel-catalyzed reaction. In the presenceof a nickel bidentate complex, heat, zinc, DMF,and a weak acid, allylic acetates react with carbonyl compounds.The carbonyls explored demonstrateseveral types of functionalitiesacceptable for this reaction from electronically rich aromatic aldehydes to non-aromatic cyclized ketones. Like the carbonyls, allylic acetates also can have varying functionalities. Non-symmetric allylic acetateshave been studiedfor their conversion efficiencies and regioselectivity. These properties include coordination, steric hinderance, and isomeric arrangement (geraniol and linalool).The goal of this work is to find a simple set of allylation conditions using stable allylic acetates that can be of use to other chemists.

Matthiesen, Christian

Institution: ***OK - University of Central Oklahoma***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Christian Matthiesen

Abstract Name: The Dutch Stranger?s Library: An Examination of Donations to the Library of the Dutch Church in London and What it can Teach Us About Modern Library Collection Development

My research focuses on the Dutch Stranger's Church in London, more specifically on their library, and how it grew and developed through periods of political and social strife, upheaval, and change in the seventeenth century. More specifically, I wish to research the two decades between 1640 and 1660, during the English Civil War and the Republic. During this time, England was in a tumultuous state for both Englishmen and foreigners, when considering the English Civil War, the short-lived Republic, and the restoration of the monarchy, as well as the Anglo-Dutch wars, all happened at this time. This was a difficult time for the Dutch community in London, and the library provides a lens through which to view how the foreign community navigated the political turmoil. Little scholarly attention has been paid to this historic library, but I am drawing on the data collected by the Dutch Church Book Provenance Project, a research effort in which I have participated and which seeks to create a census of the library's contents. I have created my own dataset of book donors that I am comparing to the libraries acquisitions to identify changes in the collection between the years of 1640 and 1660. The library's contents demonstrate ways the foreign community reacted to rapidly changing political realities. This research challenges the prevailing notion that libraries should remain neutral repositories. The research also affords an examination of the history of the Dutch Church Library, and how collections could serve as an expression of identity for foreign communities.

Mattix, Merisa

Institution: *VA - George Mason University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Merisa Mattix

Abstract Name: **Are We Achieving Unity? Comparing Current Initiatives Addressing Political Polarization with Community Experience**

The United States has experienced increasing political polarization in the last 30 years, particularly since 2012. Many Americans have faced the division of political polarization within their communities, making not only straining daily relationships but slowly the democratic process.To better understand sources of and solutions to increasing political polarization in the US, this project utilizes two studies to examine how American civil society actors, specifically America-based religious and non-governmental organizations (NGOs), address this pressing challenge. Study 1 features a mixed-method analysis of mission statements and project descriptions of American NGOs (N=100) addressing domestic political polarization nationally and in three different case study states, Arizona, Louisiana, and Virginia. Preliminary results indicate a wide range of approaches and possible redundancies of projects being done by multiple organizations in one community. Specific data from Arizona, Louisiana, and Virginia offer interesting divergences and similarities in initiatives among different voting histories and policy priorities. To complement this national data and offer insight into Louisiana's NGOs' strategies, Study 2 centers on a series of semi-structured interviews (N=9) with religious leaders and congregants of two churches in Lake Charles, Louisiana, on topics related to (1) participants' conceptions of political polarization, (2) experiences of polarization in their communities, and (3) recommendations to address polarization. Taken together, results from both studies suggest civil society actors, specifically American NGOs and religious institutions, can play significant roles in addressing political polarization throughout the United States.This data offers a foundation for future interventions to be implemented in polarized communities across the country, especially those heavily religious. In comparing all NGO interventions with those of specifically religious institutions, possible advantages and disadvantages may be discovered, and best practices for addressing political polarization in religious communities may be uncovered.

Matylis, Sophia

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sophia Matylis,
John Larkin

Abstract Name: **Functional Genomics Tool for Calcium Signaling in Schrenkiella parvula.**

Combating environmental stressors such as salinity presents a major challenge to agriculture. Salinity in soil and water reduces crop yield, with the majority of plant species being adversely affected by salty environment. With higher concentrations of sodium, changes in hydrostatic pressure and ion transport cause physical changes in the plasma membrane and cell wall of a plant leading to dehydration and eventually cellular death. Exploring plant mechanisms for surviving such stressors are necessary as fresh water sources are limited and arable land are slowly being depleted. Salinity stress can also be observed to have consequence in hormonal imbalances particularly in the regulation of other ions. In salt tolerant plants calcium sensors play a key role in supporting plants in salt environments. Calcium signaling is a central aspect to both developmental and adaptive processes in plants being an essential macronutrient as well as a second messenger in biological processes. When sodium levels increase, signals for protein are activated throughout the cell by calcium there-for inhibiting excessive ion accumulation. This shows that intracellular calcium signaling lessens the effect of sodium levels in salt tolerant plants. Schrenkiella parvula in addition, shows significant growth capacity during salt stress when compared to its popular stress sensitive relative: Arabidopsis thaliana. Schrenkiella parvula being an extremophyte is a plant that can be characterized by its ability to withstand environments with extreme heat, cold, salt, acid and alkaline traits. Their ability to handle intense environments can be attributed to the high activity of its calcium sensors. The goal is to make transgenic plants expressing fluorescent calcium sensors proteins to study calcium signaling in S.parvula in response to salt and then compare this to the responses in the salt sensitive relative Arabidopsis thaliana.

Matzirakis, Annaleisa

Institution: *TN - Columbia State Community College*

Discipline: Biology

Author/Contributors:
Annaleisa Matzirakis *James Bautista* *Elvira Eivazova*

Abstract Name: **Discovery of a programmed frameshift in the tail assembly chaperone genes of the novel bacteriophage SeaWolves**

Bacteriophages are viral particles that specifically infect bacterial cells and have a potential use in the treatment of antibiotic resistant bacterial infections. The goal of this study was to characterize and annotate the genome of the novel bacteriophage SeaWolves that belongs to the EE bacteriophage cluster. Previously, we had discovered and annotated two other novel Actinobacteriophages of the EE cluster, Vanisius and Jannah, which we used for comparison in this study. EE cluster bacteriophages generally utilize the virulent lytic cycle and their genomes are relatively small in size with approximately 17,383 base pairs. The novel phages were isolated from soil samples using a known host, the soil-dwelling bacterium Microbacterium foliorum. Genome characterization and annotation were performed using PECAAN, Aragorn v1.2.38, tRNAscan-SE and DNAMaster annotation software tools. Our comparative genomic analysis demonstrated that SeaWolves and other EE cluster phages have a programmed translational frameshift in the tail assembly chaperone gene family. We identified and mapped the highly conserved slippery nucleotide sequence GGGAAAA within the tail assembly chaperone genes #10 and #11 by specifically searching for a slippery sequence motif across the 89 phage members of the EE cluster. The overlapping two open reading frames of these genes, resulting in production of two proteins, are flanked by the genes encoding the major structural components of the phage tail architecture. Further bioinformatics analysis showed the absence of the tRNA genes in the SeaWolves genome but generated strong evidence for strong conservation in the (-1) frameshifting site GGGAAAA. We conclude that such a consistent similarity in the EE cluster phages gene organization is not accidental, and that the programmed frameshift plays an important biological role, which has been conserved during phage evolution.

Maus, Abigail

Institution: *PA - Duquesne University*

Discipline: Biology

Author/Contributors:
Abigail Maus,
Tecora Tisdale,
Taylor McClure,
Alexandria Woods,
Michael Jensen-Seaman

Abstract Name: **Length Variation at a Microsatellite in the Human Relaxin (RLN2) Promoter Affects Transcription Levels in Vitro**

Complications with preterm birth are the leading cause of infant mortality and morbidity worldwide. Several factors contribute to susceptibility, but previous studies identified an association with the promoter region of the relaxin gene (RLN2) and levels of relaxin during pregnancy. RLN2 codes for human relaxin hormone, which is involved in preparation of membranes and cervical tissue at the onset of labor. We hypothesize that different compositions of a $(CT)_n(GT)_m$ microsatellite within the relaxin promoter will produce different levels of relaxin. To test our hypothesis, we amplified the ~1kb upstream promoter region from four different previously genotyped human DNA samples, ligated the products into a pNL1.1 luciferase reporter vector, and transfected into a human placental cell line to quantify transcription in vitro using a luciferase assay. DNA sequencing confirmed these promoter alleles contained 23, 28, 33, and 38 microsatellite repeat units. Differences in transcription levels among alleles were evaluated with a one-way ANOVA test. These results will be discussed in light of human genetic variation at RLN2 and susceptibility to preterm birth.

Mayeda, Courtney

Institution: *IL - North Central College*

Discipline: Biology

Author/Contributors:
Justyn Salas,
Courtney Mayeda,
Gregory Ruthig

Abstract Name: **A New Method for Counting and Identifying Water Molds in Field Samples**

Water molds (Oomycota) are aquatic multi-host pathogens that infect many species of amphibians and aquatic invertebrates. We developed a modified method for the quantification of reproductive propagules (zoospores) responsible for water mold transmission between hosts in aquatic habitats using Microwell Plates (MWP). We added 100 µL of potato dextrose agar to each well of a 96 microwell plate. We then added 100 µL of water from a serial dilution of water mold zoospores with known concentrations based on hemocytometer counts. We found that there was a close relationship between hemocytometer counts and microwell plate counts. When we tested water samples from a local wetland, the MWP method proved to be precise and repeatable when water samples from four field locations were assessed. To confirm that the quantified growths on MWP are the target species of water mold, Saprolegnia Sp. 2, molecular methods of identification such as using specific probes and primers in a quantitative polymerase chain reaction (qPCR), and restriction fragment length polymorphism (RFLP) in a restriction enzyme digest were tested. A DNA extraction method using squishing buffer and proteinase K was successful in reliably extracting water mold DNA for use in qPCR. Moving forward, the specific primers and probes that were created for the target species of water mold for use in the qPCR and the restriction enzymes that were selected for use in a digest will be tested on extracted water mold DNA to identify the growths counted.

Mayhew, Rachael

Institution: *GA - Georgia State University*

Discipline: Education

Author/Contributors:
Rachael Mayhew,
Suazette Mooring

Abstract Name: **Measuring the validity of the Laboratory Perspectives Instrument and exploring the laboratory perspectives of undergraduate chemistry students.**

Students' perspectives of the chemistry laboratory may influence their motivation or performance. In a prior phenomenographical qualitative study, eight laboratory perspectives were identified. A survey instrument was developed using the wording provided by undergraduates in this qualitative study about their experiences in the chemistry laboratory. These perspectives – Explorer, Independent Researcher, Socialite, Mastery, Skill Developer, Time Saver, Detail Oriented, and Apathetic – are common in gateway chemistry courses which are crucial for developing medical, industrial, and academic minds. Using these laboratory perspectives, we seek to answer the following questions: (RQ1) Is the laboratory perspectives instrument valid and reliable? (RQ2) What perspectives are prevalent in general and organic chemistry labs? In the fall 2022 semester, students in general and organic chemistry participated in the survey and cognitive interviews. By incorporating cognitive interviews and quantitative survey data, the researchers take a mixed-method approach to answer the research questions. Through cognitive interviews item wording, comprehension, and the reasoning behind decisions on the survey will be assessed, and changes will be made to the instrument when applicable. The validity of the instrument will be investigated using exploratory factor analysis and scree plots. Statistical correlations will be determined to provide information about relationships that may exist between course levels, laboratory perspectives, goal orientations, and demographics. Through these analyses, we expect to provide additional evidence for the eight laboratory perspectives uncovered in the previous study and for the validity and reliability of the survey instrument.

McAfee, Emma

Institution: *MN - St. Catherine University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Lana Prokop,
Whitney Wenner,
Emma McAfee

Abstract Name: **The Prevalence of Urinary Incontinence in Female Collegiate Athletes**

The unintentional loss of urine, or urinary incontinence (UI), can have a negative impact on quality of life, including low self-esteem, depression, and reduced participation in social activities. UI has been studied in post-partum and older women; however, there is little research on female collegiate athletes, likely due to the fact that most collegiate athletes are young, relatively healthy, and have not given birth. The purpose of this study is to identify the prevalence of UI among National Collegiate Athletic Association (NCAA) Division-III female athletes at a Midwestern university. Emails and fliers were used to recruit all 159 eligible student-athletes; potential participants were asked to complete a voluntary, anonymous, online survey regarding their experience with UI during sport. Questions included information about unintentional leakage of urine during sport participation (practice, training, competition), as well as everyday life. The response rate was 80.5%. In everyday life, 59.4% of participants experienced UI, while 43.0% experienced UI related to sport. Based on prior literature, the eleven sports were divided into three impact groups: high, moderate and low. According to a chi-square analysis, there was no statistically significant difference in prevalence of UI between impact groups. Based on the high prevalence of UI in this study population, it is recommended to screen for UI in the female athletic population, beginning in adolescence, to treat the condition in its early stages. It is important to encourage screening to allow women to continue to be physically active and improve their overall quality of life. Further research should include how education for healthcare providers, athletes, and athletic staff can impact the prevention of UI and assist in promoting early interventions to keep athletes in sport and mitigate future issues.

McAllister, Annie

Institution: *VA - George Mason University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Annie McAllister

Abstract Name: **Understanding the minimal requirements for selective ribose binding using de novo protein design**

Adenine triphosphate, ATP, is the main energy source in nature, but how it interacts with proteins, specifically their binding sites, is not fully known. There are two main reasons for this. First, ATP has three distant chemical parts: adenine, triphosphate, and ribofuranose. While some proteins bind ATP the contribution from each part is unknown. Secondly, natural protein is complex due to millions of years of evolution. By building a de novo protein that can bind each individual component and then retroactively recapitulate the active site, the fundamental biophysical forces for binding the entire ATP molecule can be found. These principles can then be transferred to other proteins for a variety of different uses such as understanding the metabolic pathway through ATP kinase activation and inhibition. My project specifically looks at generating a protein that binds ribose, the 5-carbon sugar in ATP. We used computational tools to design and analyze our initial protein designs. We used computational tools to design and characterize our initial protein designs. The gene was ordered with a histidine tag and purified using standard Ni-Column denaturing protocols. The predicted secondary structure, both with and without ribose present, was confirmed using circular dichroism. Currently, the dissociation constant and thermodynamic properties are being found by utilizing isothermal titration calorimetry. Simultaneously, we are looking at using alternative computational methods, Rosetta, to build different protein variants to test if different computational approaches will design a protein with an equivalent or better affinity for sugar. Currently, no Rosetta protein is better than the previous hand-designed protein, however, flexible docking is being implemented to test for secondary structure change.

McAnally, Ilariah

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Ilariah McAnally

Abstract Name: An Interregional Analysis of Scandinavian Pre-Roman to Roman Iron Age Ceramics

During the peak of the Roman Iron Age, the site of Sorte Muld in Bornholm, Denmark was a thriving settlement that flourished on agriculture, livestock, and oceanic trade with the Roman Empire and Gothic groups in Germany. These trade connections highly influenced the customs and material culture of the occupants of Sorte Muld. What remains of Sorte Muld is buried below a wheat field with the looming threat of agricultural activity disturbing the cultural context of this spectacular site. While Sorte Muld is famous for itsgulgubbes(hammered gold foil images depicting men, women, animals, and other unidentifiable figures), the ceramics at the site are much more abundant and can tell us about the daily life and true purpose of the settlement. After analyzing and determining the typology of 64 ceramic sherds, it can be determined thus far that the site can be placed between the Pre-Roman to Roman Iron Age. However, I will be taking a step further in comparing my finds to a dataset from Sorte Muld's sister-site, Uppäkra, to determine if the area of excavation was domestic or ceremonial. Evidence suggests that Sorte Muld is primarily a domestic site, but the area of excavation, where I worked last summer, may have been ceremonial. During that research, the postholes of a large domestic structure were uncovered along with agulgubbeand other special metal items. My ceramics analysis sheds light on what activities may have gone on within this building at Sorte Muld and whether its primary function was ceremonial or domestic.

McBain, Alyssa

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Alyssa McBain

Abstract Name: Intentional Paleoart: Creating Accessible and Engaging Resources for Children using Fossils from the Arlington Archosaur Site

Aside from the representation of dinosaurs in media and pop culture, scientific concepts in paleontology are often inaccessible to and misunderstood by many. Media often misrepresents paleontology, and many outside the sciences misunderstand even accepted theories, such as evolution. Challenging concepts, unfamiliar vocabulary, and difficult-to-pronounce names can be intimidating and diminish interest in the field. For most children, exposure to paleontology will be mediated through adult caregivers, and the level of exposure, will be relative to the adult's relationship with and understanding of science. Since a child's encounter with paleontology may be brief, it is critical to remove barriers and capitalize on these moments by introducing paleontological materials which are both engaging and scientifically accurate. With a goal of making paleontology accessible, informative, and appealing to children, we have developed intentional line illustrations to be utilized as coloring page activities. The drawings represent real species discovered at the Arlington Archosaur Site (AAS) near Dallas, Texas. Each species image is created with a targeted age group in mind with respect to cognitive abilities and attention skill levels of a developmental stage. Features we have fossil evidence for, such as teeth or toe bones, are highlighted to explain how paleontologists make inferences about a species' diet, behavior, and environment. Through intentional paleoart, we can connect a fossil to a species' ecology, allowing for analogies to be made between extinct animals and living counterparts. In creating paleoart which is accessible and relatable, we can support child caregivers in relaying scientific information which leads to learning gains, and in turn, better represent paleontology as a discipline.

McBride, Emma

Institution: ***IL - Loyola University of Chicago***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Emma McBride

Abstract Name: Development of a Socio-Scientific Air Quality Data Interface: A Study of Loyola University Chicago?s Inter-Campus Shuttle System

In 2010, the Loyola University Chicago (LUC) Biodiesel Program became the first school program in the U.S. licensed to sell biodiesel, a renewable liquid fuel produced from used cooking oil. When used as a blend in existing diesel engines, there is a 50% reduction in particulate matter (PM) emissions from biodiesel engines compared to conventional diesel engines and 70% reduction in hydrocarbon emissions. The LUC Biodiesel Program has begun fueling two of the six shuttle buses utilized by LUC on 100% biodiesel (B100). This project aimed to study the socio-scientific impact of bus emissions on air pollution by compiling a community-science air quality dataset through a comparative study of LUCs shuttle bus system. Seventeen air quality sensors were strategically placed throughout the shuttle bus route system for B100 and petroleum diesel buses, including on five student passengers. These sensors recorded GPS coordinates, PM2.5 and volatile organic compound concentrations by minute. Data was stored in a relational database and used alongside GIS software to generate a heatmap of air quality across LUCs campuses and transportation systems. We hypothesize that B100 buses will emit less PM and VOCs than petroleum diesel buses. We anticipate that analysis and modeling in early 2023 will correspond with our hypothesis.

McBride, Kayley

Institution: ***OK - University of Central Oklahoma***

Discipline: Computer Science/Information Systems

Author/Contributors:
Kayley McBride,
Gang Xu,
Johannes Blaschke

Abstract Name: ParaView-ing Data at NERSC using Jupyter Notebook

ParaView is an open source data visualization and analysis program that is used by researchers around the world to analyze complex scientific datasets, containing things like a mixture of particles and fluids. Due to their size and complexity, these datasets cannot be effectively analyzed with general-purpose tools like Microsoft Excel. Prior to this project, ParaView data at Lawrence Berkeley National Laboratory was exclusively analyzed using the ParaView graphic user interface (GUI) client. However, Jupyter is an increasingly popular web-based application that allows users to create and share documents containing code. This project is investigating ways to expand ParaView support in Jupyter. Kitware, the creators of ParaView, have developed a kernel for Jupyter that allows a python representation of the ParaView scene in Jupyter to be rendered by ParaView and displayed in the same notebook. In previous work we have shown that Jupyter notebooks running the ParaView Kernel can be set up on a personal computer and connected to a ParaView server that is running on a supercomputer. This project aims to fully implement this kernel on the supercomputers at the National Energy Research Scientific Computing Center (NERSC) through a Kubernetes cluster on the NERSC network.

McCabe, Aryee

Institution: *MN - Minnesota State University - Mankato*

Discipline: Biology

Author/Contributors:
Aryee McCabe,
Matthew Kaproth,
Jean Pengra

Abstract Name: **Oak Osmolyte Concentrations in Response to Drought**

Water represents an essential environmental factor, as it impacts plant growth, development, and structure. Drought stress induces plant acclimation to avoid tissue loss or death. Plants must adjust their physiology in response to low water concentrations. One way plants acclimate to drought is by accumulating more osmolytes (e.g., sugars, sugar-alcohols, proline). Osmolytes are known to increase drought tolerance in plants by increasing the uptake of water by plant tissues. Oak species are widespread and adapted to a wide range of mesic, and xeric conditions. Mesic environments have an abundance of water, but xeric, or drought environments lack water. The objective of our research is to investigate the amount of osmolytes, specifically proline, produced by various oak species using a common garden. Eleven oak species were grown under two water conditions: well-watered and drought. Leaf tissue extracts were analyzed for proline through a colorimetric assay. Currently, results indicate that oaks from well-watered treatments and that originate from high organic carbon soils have higher concentrations of proline. Oaks from drought treatments increased overall osmolyte concentration and did not increase proline concentrations. This may result from limited nutrient uptake under drought treatments. More research should be done to elucidate how access to soil nutrients impacts drought tolerance. Data from this research could spring new directions for higher crop yield in drought conditions. Furthermore, results from this research may provide insights as to how plants acclimate to drought in a changing global climate.

McCaffrey, Amy

Institution: *NY - Adelphi University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Amy McCaffrey

Abstract Name: **Examining Short-Term and Long-Term Stress Impact on Cognitive Health in College Students**

Stress can impact psychological health, and for college students, the short-term (ST) stressors involved in school have been correlated with higher psychiatric problems such as depression, anxiety, and substance abuse (Pedrelli et al., 2014). Chronic stress has been linked to lower cognitive functioning, but studies have mainly focused on older populations (Marin et al., 2011). Much of this work has pointed to the impact of long-term (LT) stressors, such as the link between PTSD and cognitive impairment, especially in veterans (Vasterling et al., 1998) and the effects of childhood trauma on adults (Majer et al., 2010). Most of the cognitive research done on stress has been focused on memory and does not adequately compare ST to LT stress. In our study, we want to examine whether the relation between stress and cognitive deficits seen in older populations also applies to college students. We will examine attention in addition to memory, meanwhile comparing ST and LT stress in hopes to fill these gaps. Participants will complete two surveys, one for LT stress (Strain and Adversity Inventory for Adults; Slavich, 2018), and one for ST stress (Student Stress Scale; Firn, 2017). To test cognitive functioning, students will also complete measures of spatial working memory (Corsi Block Task), and attention (Flanker Task). Regression analyses will be used to identify any effects of ST and LT stress on these cognitive tasks. Data collection is ongoing, but we predict that students who score higher on both the ST and LT stress surveys will score poorer on both the memory and attention tasks. Memory and attention are cognitive skills that are necessary for successful learning, and studying the implications stress can have on these skills is essential to coming up with solutions on how to prevent cognitive impairment during such a pivotal time in life.

McCann, Marci

Institution: *MO - Rockhurst University*

Discipline: Biology

Author/Contributors:
Gavin Schaefer,
Marci McCann,
Dr. Chad Scholes

Abstract Name: **Simulated Rooftop Prairie Plant Community Comparison to a Prairie Remnant Plant Community**

In 2008, in downtown Kansas City Missouri, a 14,000-square-foot rooftop prairie garden was established in a 4-inch coarse substrate. 15 years later, the garden consists of a self-organized community of native prairie plant species. In novel anthropogenic conditions, we compared this simulated plant community and its comparable ecosystem. A restored prairie remnant, Jerry Smith Park, served as a comparative community to the rooftop. We observed species richness and abundance via the Daubenmire Quadrat Method over three sampling plots: the rooftop garden, an unmanaged field in Jerry Smith, and a recently burned hillside in Jerry Smith. In a three-month sampling period, 77 plant species were observed. The three plots were compared using functional group percentages, Conservatism Coefficient (CC) means, and Floristic Quality Index (FQI) scores. The rooftop prairie Conservatism Coefficient means were similar to both prairie remnant sites. The rooftop prairie had lower FQI scores than the managed site, but similar scores to the old field site. The rooftop had higher abundance of native forbs compared to both Jerry Smith sites. While both remnant sites had higher abundances of grasses, sedges, and rushes, the managed plot had a significantly higher abundance of native graminoids. Within Jerry Smith, we observed higher abundance of native species overall. However, they varied throughout the sampling season. These differences are reflective of the abiotic and aesthetic pressures on the rooftop garden. Contrasts between the remnant plots are representative of the management they have received.Similarities found between the rooftop and remnant sites offer insight into the bridge between anthropogenic environments and reference sites. Further research comparing the biotic and abiotic structure and function of different prairie remnants to anthropogenic prairie communities is warranted.

McClure, Taylor

Institution: *PA - Duquesne University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Taylor McClure,
Emily Chadwick,
Michael Jensen-Seaman,
Pamela Marshall

Abstract Name: **Identifying the Presence of Semen Through the Detection of Fructose**

Seminal fluid is among the most valuable sources of biological evidence which can be recovered from a crime scene. Current tests such as the prostate-specific antigen (PSA) test and microscopic examination for spermatozoa are non-comprehensive and have high potential for false positive or false negative results. Fructose is a naturally occurring sugar which serves as the main energy source for sperm in semen. We hypothesize that quantification of fructose in semen under different conditions, and compared to other bodily fluids, may aid in identification of crime scene samples. A colorimetric fructose assay kit was used to quantify fructose levels in semen samples, as well as other common biological fluids such as blood, saliva, urine, and vaginal fluid. Additionally, we aim to compare semen samples from vasectomized and non-vasectomized men, under the hypothesis that the presence of sperm will decrease fructose levels over time as this sugar is metabolized. The differences in fructose concentrations observed, as well as potential implications for the discriminatory power of fructose-based identification of body fluids, will be discussed.

McCollum, Isabella

Institution: ***PA - Duquesne University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Manoela Neves *Isabella McCollum* *Alexis Throop*
Rana Zakerzadeh

Abstract Name: Quantifying the Effects of Tissue Biomechanical Properties Using Fluid-Structure Interaction Analysis

Developing computational models and predictive frameworks for biomedical systems is crucial to advancing research on pathological conditions, considering that certain in vivo studies are particularly challenging due to invasive procedures, and in some cases, improper diagnostic and treatment tools. One type of computational mode of analysis is known as a fluid-structure interaction (FSI) which is the Multiphysics interaction of a fluid flow with a deformable structure. In FSI both fluid and mechanical properties of the tissue are important factors and contribute significantly to the model predictions. Young's modulus and Poisson's ratio are two essential mechanical properties that are necessary to describe the elastic behavior of the tissue, however,wide range of elastic modulus values have been reported in the literature. This study aims to provide a better understanding of biomechanical properties that can be used to build computational simulations. We investigate the influence of tissue elasticity on the structural and fluid dynamic response of models, with application to human cardiovascular and phonation systems. Specifically, the interaction between turbulent glottal airflow in the larynx and vibrating vocal fold during phonation is simulated using a fully coupled FSI approach. We have also explored the interaction between the blood flow and arterial wall deformation in patient-specific abdominal aortic aneurysm models. The fluid flow is described by the unsteady, viscous, incompressible Navier–Stokes equation, and the dynamics of tissue is modeled by the Navier equation. Tissue is considered as a transversely isotropic material for which the stiffness parameters include the transverse elastic modulus and longitudinal elastic modulus. Parametric simulations are performed by systematically varying the transverse and longitudinal stiffness parameters. Important model predictions including flow rate, fluid pressure, maximum tissue displacement and spatiotemporal stress metrics, as well as the effect of the stiffness parameters on these output parameters are analyzed.

McCormick, Hunter

Institution: ***KY - University of Kentucky***

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Hunter McCormick

Abstract Name: Addressing Money Laundering in the United States Real Estate Sector

The United States faces threats to economic stability and legal integrity from money laundering practices in the real estate market. Legislative loopholes, complicit enablers, and aging technological systems used by government agencies allow individuals to flow ill-gotten wealth into the United States with little effort. As a result of these factors, local economies suffer job loss, once-inhabited properties lie empty in decay, and trust in government weakens. Illegal wealth is transformed into protected assets in the form of property and can be stored to later fund terrorist organizations or influence the American people. Approximately $2.3 billion was laundered through real estate in the last five years alone.To address this issue, I identified policy alternatives using criteria of security, technological capability, and lasting effectiveness. I also prioritize solutions that are more likely to produce long-lasting results over temporary fixes.

McCormick, Macy

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Macy McCormick *Olivia Ganser* *Magdalana Trilling*
Rebecca Jarzynski

Abstract Name: **Preparing Communication Disorders and Sciences Students to Collaborate with Interpreters: The Power of Interdisciplinary Experiences**

Nearly 25% of children in the United States currently speak a language other than English at home (Ann Casey Foundation, 2022). Despite the clear and compelling need for competent and linguistically responsive assessment and intervention practices, practicing speech language pathologists (SLPs) frequently report feeling underprepared to accurately work with interpreters when serving dual language learners (DLLs) (Guiberson; Atkins, 2012; Santhanam; Parveen, 2018). However, collaborative training experiences can provide SLPs and interpreters with the opportunity to converse about their roles, discuss ethical problems with interpretation, and merge their shared thoughts to ensure best practices for clients (Zhang, 2020). The purpose of this research project was to understand the ways in which an interdisciplinary simulated training experience and interdisciplinary immersion screening experience compare and contrast in relation to communication sciences and disorders (CSD) and interpreter students' feelings of preparedness for working collaboratively within their future professions.Researchers gathered data through reading, analyzing, and then qualitatively coding CSD and interpreter student summaries written post- simulated experience and post-screening. Student reflections included overall perceptions of the experience as well as perceptions regarding the ways in which the experiences influenced their feelings of preparedness. Student reflections and interviews were analyzed using inductive coding procedures as described by Merriam and Tisdell (2016). Codes, categories, and subcategories were revised and operationally defined during the coding process, until a final set of codes, categories, and subcategories was developed. Findings highlight the similarities and differences in CSD and interpreter perceptions, as well as the similarities and differences in student perceptions of an interdisciplinary simulated experience as compared to an interdisciplinary immersion screening experience. Findings will inform future pre professional and professional training experiences designed to increase SLP confidence and competence for working with interpreters and to increase the quality of interpreter and SLP practices for DLLs.

McCrary, Chase

Institution: *NC - North Carolina State University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Jada West

Abstract Name: **The Continual Analysis of the Effects of Poor Infrastructure and Environmental Justice on Hydrologic Systems of the Walnut Creek**

This project focuses on the Walnut Creek area where environmental justice, poor infrastructure, and faulty floodplain management have been prevalent issues since the 1990s. This research aims to determine how past inequalities in the Walnut Creek Wetland area have influenced land-use decisions today and analyze how poor infrastructure has caused an increase in bacteria found in our creeks. Our study area consists of weekly visits to four different sites to determine the effects of local development on the creek. We currently measure chemical and physical parameters at all four sites. Measurements of pH, specific conductivity, dissolved oxygen, and temperature are done using a YSI device. Along with these variables, we also utilize nitrite/nitrate strips to quantify their respective levels. In addition, a sewage pipe located near our testing sites has begun to show signs of deterioration. This leads us to hypothesize whether this pipe has caused waste leakage in Wetland Creek. Due to this concern, we test the biological aspect of the water quality via E. Coli testing once a month at two of the four sites. We will test these parameters before, during, and after replacement to determine whether there has been a significant increase or decrease in levels of bacteria. The findings of this research will be hugely beneficial to the community surrounding Walnut Creek and the world as a whole. Throughout this project, scientists and everyday individuals will be able to identify certain environmental stressors and possibly link them to inequalities occurring in similar communities.

McCullough, Abby

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Morgan Dekan *Annabelle Howat* *Abby McCullough*

Abstract Name: **Examining Low-Income Household Shopping with Supplemental Nutrition Assistance Program Benefits at the Eau Claire Downtown Farmers? Market Using the Market Match Incentive Program From 2018-2022**

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. In 2020, COVID-19 increased the number of families facing food insecurity while the ECFM also faced challenges regarding how to operate safely. This poster uses administrative data to analyze shopping by SNAP households at the ECDFM using the MMP between 2018-2022. The number of SNAP households shopping at the ECDFM increased in 2020 and 2021 while the associated spending also increased in both years as the SNAP caseload was rising due to the pandemic. As the SNAP caseload declined to about the same level as in 2020, the number of SNAP households shopping at the ECDFM using the MMP and the corresponding spending declined in 2022. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at the ECDFM using the MMP over this period. This poster is connected to a another submitted poster analyzing a variety of data from surveys of SNAP households shopping at the ECDFM using the MMP during these years.

McCune, Ava

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ava McCune *Julie Grossman* *Hannah Walsh,*
Adira Fernandez *Oliver Kirsch* *Bonsa Mohamed*

Abstract Name: **Evaluating the Effect of Planting Time on Nitrogen Fixation in Winter Legume Cover Crops in High Tunnels**

Cover crops are non-harvested plants grown to improve soil health in agricultural systems.Legume cover crops associate with beneficial soil bacteria that form root nodules and fix atmospheric nitrogen into a plant-available form via a process known as biological nitrogen fixation (BNF). Plastic covered greenhouse structures, called high tunnels, are a valuable season extension tool in cool regions of the United States, however, the resulting intensified vegetable production can negatively impact soils. Planting legume cover crops in rotation with summer vegetable crops is an emerging strategy to mitigate these negative effects, yet knowledge about specific planting times and their effects on BNF is limited. This research evaluates the degree to which planting time of two winter cover crops, hairy vetch (Vicia villosa Roth) and Austrian winter pea (Pisum sativum L.), affects: 1) plant biomass and productivity, 2) legume cover crop nodulation, and 3) BNF. I hypothesize that cover crops planted earlier in the fall will have greater biomass contributions and increased BNF, as there is a longer growth period and more time for beneficial associations with soil rhizobia to develop. Biomass was collected in December 2021 and 2022 using 0.1M quadrat frames, dried, and weighed. Nodule mass will be collected in December 2022 by collecting, drying and weighing root nodules from two plants per treatment plot. Biological nitrogen fixation will be measured using 15N natural abundance. In 2021, planting time and species type affected biomass production, with biomass highest in early planted vetch, and lowest in late planted vetch. Across species, both early planted pea and early planted vetch produced more biomass than their late planted counterparts. Nodulation, BNF, and year two biomass data will be collected and analyzed in winter 2022.

McCutchen, Sydney

Institution: *MN - Hamline University*

Discipline: Physics/Astronomy

Author/Contributors:
Sydney McCutchen,
Lifeng Dong

Abstract Name: **Optimizing Structure and Fabrication Process of Thin Film Solid-State Lithium Ion Batteries**

Although lithium ion batteries (LIBs) have been utilized in a broad range of technical applications such as: electric vehicles, laptops, cell phones, and other electronics, few studies have been conducted in utilizing thin film lithium ion batteries for low power electronics. In this study, thin film layering of aluminum, nickel, lithium cobalt oxide, lithium phosphate, silicon, pyrolytic carbon/graphite, titanium, and copper were constructed through thermal vapor deposition and magnetron sputtering deposition equipped within a high power vacuum chamber. Various parameters (e.g., deposition time, deposition power, hot-pressing time and temperature, anode electrode materials) were tested to optimize the structure and electrical properties of LIBs. Through the process of product experimentation over 200 batteries have been fabricated, tested, and thoroughly analyzed to determine the overall efficiencies of our selected parameter combinations. Testing results demonstrate copper as a necessary addition to titanium serving as a negative current collector. Active testing of the implementation of various graphites and layering thickness have demonstrated positive contributions to increase successful charging cycles. Many parameters are still available for tests and analysis to further advance our research. Result analysis indicates promising directions to improve solid-state thin film LIBs while increasing battery performance through continuous optimizations of various structural and procedural parameters.

McDannold, Layren

Institution: *PA - Susquehanna University*

Discipline: Political Science

Author/Contributors:
Layren McDannold

Abstract Name: **Peaceful Planet: The Relationship between the Environment, Conflict, and Peace**

Since the end of the Cold War, intrastate conflict has become the most predominant type of armed warfare in the world. There are a multitude of factors that lead to and affect the continuance of this type of violence, including natural resources and environmental issues. This has led to increased interest and research in environmental peacebuilding, a process comprising the multiple management pathways that integrate environmental issues to support conflict prevention, mitigation, resolution and recovery. Peace building in this form allows both local and international actors the ability to not only target the root issues of conflict and gain mutual trust, but also to utilize an important sector to push for peace and rehabilitate society, thus resulting in longer-term peace. In order to study this phenomenon, I used case studies of Liberia and the Central African Republic, with Liberia as my success case and the CAR, in which war resumed, reflecting failed peacebuilding. I hypothesized that environmental peacebuilding would lead to a longer period of peace if it used a combination of top-down and bottom-up movements and included communication of opposing groups. Through the analysis of the movements, actors, and violence, it became clear that my hypothesis could not be supported, and instead that environmental peacebuilding largely works as a proxy for a more inclusive peacebuilding process that targets root causes of conflict.

McDearmond, Ali

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ali McDearmond *Benjamin McManus* *Despina Stavrinos* *Keith Chichester*

Abstract Name: **The Impacts of Access to Food, Healthcare, and Recreation as Barriers to Licensure in Adolescents**

Mobility is essential for daily tasks, such as receiving healthcare, obtaining food, and engaging in leisure activities. Adequate access to food and healthcare is an essential component for leading healthy, productive lives, while leisure or recreational opportunities benefit autonomy development and well-being. This project examined if food, healthcare, and recreation access were contributing factors in the decision to obtain a driver's license in adolescents. Drawn from a larger, longitudinal study, 16- to 18-year-old adolescents with and without a driver's license (Mage=17.11 years, SD=1.08, nLicensed=77; 53% female; 73% Black) provided sociodemographic information, home addresses, and family affluency. Geospatial software mapped participants' addresses and assessed the density of food, healthcare, and recreational services within a 1-mile radius. Logistic regressions indicated increased recreational service density and black race were associated with decreased odds of licensure (OR=0.75, 95% CI=0.58-0.95 and OR=0.14, 95% CI=0.2-0.90, respectively). Higher family affluency was associated with increased licensure odds (OR=2.32, 95% CI=1.69-3.18). Access to food or healthcare had no influence on licensure status. These findings may help target areas with low access to recreational activities for expansion of recreational options or alternative transportation options. Additionally, areas with lower recreational service density may require focus for driver training programs due to increased licensure in those areas. Those with lower accessibility to recreational activities may be at a greater risk for poor health outcomes, due to both the need to drive for recreational activities (i.e., injury risk) and lack ofphysical activity. Future research should identify other geospatial factors affecting mobility and subsequent health outcomes, as well as examine additional sociodemographic factors affecting licensure and mobility.

McDonald, Alexandra

Institution: *CAN - Carleton University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alex McDonald

Abstract Name: **Measuring Physiological Synchronicity in "Story Troves", a novel treatment tool for those with Aphasia**

Group activities seem like an obvious tool when promoting social connection, but it is not sufficient to place people within the same context. Those who could benefit most from social connection are limited by the biological, psychological, and social processes creating their need. Individuals with Aphasia have a significant reduction in verbal communication following stroke or injury and are at risk of social isolation and the associated neurological impact. My Independent study involved developing an experimental design to assess a novel treatment tool for those with Aphasia. "Story Troves" are a creative strategy meant to improve social connection. Using a psychophysiological framework, my design measures and models autonomic nervous system activation between group members while assessing their perceived frustration. These two variables address two of the main reported communication obstacles reported bythose with Aphasia. They also assess the impact of increased group synchrony on perceived psychological state. We will compare a group of individuals in a classic conversation group to a group using the "Story Trove" condition. Our hypothesis is that increased group synchrony will lower frustration. Should this be the case, we will have generated empirical support for a tool that could be incorporated in Aphasia treatment. We hope to extend the findings on this study to other scenarios where the risk of social isolation is present, which we may argue is far reaching given the state of the world today.

McDougle, Brandi

Institution: *NC - Western Carolina University*

Discipline: Architectural and Interior Design

Author/Contributors:
Brandi McDougle

Abstract Name: Homeless Shelter Design in America

There are 11,118 homeless shelters in America with an estimated 420,000 homeless families, consisting of 920,000 children. Homeless shelter design in America lacks elements that contribute to the mental and physical wellbeing of occupants and rehabilitation back into their communities, which can be harmful long-term. Largely, the issues plaguing these spaces the most are crowding and a lack of privacy, which is detrimental to the family units that have been making up a growing percentage of the homeless population since the 2007 economic crisis. Additionally, many individuals, largely single mothers, are dealing with PTSD, which is not taken into consideration into the larger designs. If this is allowed to continue, there will be increases in the degradation of these family units and increased stress and defensive actions. This presentation of this research is to denote harmful practices in homeless shelter design, but also elements that are beneficial for human health. Research found that while many of the homeless population are struggling with PTSD, the implementation of Trauma-Informed Design can be beneficial in combating the symptoms and aiding in taking these individuals out of fight or flight. When an individual is taken out of fight or flight, they are able to think clearly and able to better solve their problems. Additionally, positive design elements such as biophilia, natural light, and accessibility create improvements in human health and wellbeing by lowering health risks and increasing performance, general health, and healing. Allowing those who make up the homeless population to be in a space that decreases stress and improves physical health is the first step to rehabilitation.

McDowell, Alyssa

Institution: *OK - University of Central Oklahoma*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Vance Claire *Emma Kidwell* *Alyssa McDowell*
Kevin Fink

Abstract Name: How Gender Influences Gym Comfort Level in UCO Students, Staff and Faculty

Background. Physical activity and its positive effect on overall health has been studied for decades. The goal of this research is to understand if there are observable differences in gym comfort level between self-identified genders. Methodology. Researchers curated an online questionnaire to measure one's comfort level in the gym. Data collection spanned over 6 weeks during the summer of 2022. The participants (N = 290) were 24.83% cis men, 65.52% cis women, and 9.66% transgender/gender-non-conforming (GNC). Results included students, staff and faculty with several cross-tabulations functions performed through SPSS 28.0 to examine differences between self-identified genders. Results. Notable results indicated that on a scale of 1-10 (lower scores indicating less comfort) the average result for cis men being 7.90, cis women at 5.21, and GNC individuals at 6.14. Percentages listed indicate a "yes" to if participants are comfortable in certain settings. 83.33% of cis men were comfortable participating in weight training activities in contrast to 35.79% of cis women and 53.57% for GNC individuals. When asked about cardiovascular training, 100.00% of cis men were comfortable as opposed to 76.32% cis women and 75.00% of GNC individuals. Those who were comfortable in the gym in terms of social setting were: 80.56% cis men, 37.37% cis women and 46.43% GNC. Discussion. Through data collected, researchers have been able to support the hypothesis that there are differences in gym comfort levels between gender identities. One limitation was confronting how to protect transgender or non-cis individuals because the response was very low. To do this, all non-cis people were grouped into one category (though researchers acknowledge that there are differences between trans/gender fluid/non-binary individuals). Possible outcomes to this result could be future improvement on making public and private gyms feel more open and comfortable to all genders.

McFadden, Katherine

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: **Physics/Astronomy**

Author/Contributors:
Katherine McFadden,
Clifton Murray,
Victor French

Abstract Name: **Outdoor Electric Field Measurements for Physics Students**

Electric field meters (EFMs)have been designed and constructed by Langmuir Laboratory, New Mexico Institute of Mining and Technology, for educational use at the University of New Mexico-Valencia Campus. In recent physics labs, students have used these meters to detect electric fields indoors, produced by charged combs, pom-poms, and Van de Graaf generators.A more practical application of EFMs is to measure the atmospheric electric field at ground level, to warn of potential cloud-to-ground lightning—at, for example, golf courses and testing grounds for explosives. Our current goal is to, with an EFM located outside on campus, measure the outdoor ground-level electric field for not only physics classes, but also for any campus faculty and staff who might be interested. This will require (1) achieving wireless transmission of the data to the UNM-Valencia Intranet and (2) designing software that will present the data in an understandable form, e.g. a plot of the electric field versus time. Such a presentation will be especially interesting during thunderstorms, when ground-level fields can become very strong and, in the event of lightning, suddenly and dramatically change.

McFadden, Nick

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Josh Zupanc,
Pablo Garcia,
Jenna Roth,
Brynn Daniels,
Nick McFadden,
Cameron Stensen

Abstract Name: **Smartphone Use and Well-being**

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.

McFarland, Erica

Institution: ***TX - The University of Texas at San Antonio***

Discipline: Public Health

Author/Contributors:
Erica McFarland

Abstract Name: Analyzing College Students' Mental Health Effects of Social Isolation During the COVID-19 Pandemic

In 2020, a global pandemic began due to COVID-19. This led to social restrictions potentially affecting emotional intelligence, rates of depression and anxiety, and stress. College students are a particularly vulnerable group given their reliance on social relationships and the stress of academic pursuits. The population of university/ college students may be strong and healthy medically, but this population is at elevated risk of psychosocial disruptions. Assessing the health of college/ university students depends on the lifestyle of the individual. A sense of belonging acts as a predictor of mental health. This study reviewed the literature to understand the mental health and social isolation among college students during the COVID-19 pandemic. A review of seventeen articles were reviewed. Through various perspectives, the mental health and social health of university students are examined. Various sources concluded that associated findings can direct this population to various health interventions that emphasize lifestyle behavior, social connection, and overall well-being while refining the mental and social health of university students. Inclusion criteria included articles that were published within the last three years. Results showed that the research suggests during the pandemic, loneliness, emotional suffering, and social isolation. COVID-19 acted as a snowball effect by establishing essential differences in cognitive functions, academic settings, clinical practices, professional environments, and much more. These findings are essential for evaluating potential long-term consequences on the social dimension and mental dimension of wellness. Bringing awareness to college students' health challenges amid a pandemic is essential for evaluating potential long-term consequences on the social dimension and mental dimensions of wellness.

McGee, Meredith

Institution: ***PA - Lafayette College***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Meredith McGee

Abstract Name: The Year of the Lustful Lesbian: an Exploration into the Creation of the Attractive Lesbian Archetype in Pornographic Media

Pornographic media isan industry worth upwards of 1 billion dollars, showing how ingrained pornography is in American culture today. In addition, the "Lesbian" category of porn has appeared in the top five searches on Pornhub since 2007, underscoring how influential the sexualization of lesbianism is within American society. However, the sexual image of lesbians did not always exist, with lesbians being historically pathologized, instead of being seen as sexual objects. This paper examines how the establishment and rise of second-wave feminism, the gay liberation movement, and the accelerated expansion of media technology led to the rapid development of lesbians being represented in pornographic media. By looking at lesbian-produced pornographic media, such as what was seen in the lesbian magazine On Our Backs, we can see how these three movements and developments created an outlet and audience for queer pornographic media. In addition, by looking at male pornographic and lifestyle magazines such as Playboy and Hustler, we see how this dynamic shift towards sexualization not only impacted queer culture, but also straight culture. Through this examination, we see that these three cultural movements intersected to form a time where lesbian sexuality became not only tolerable- but also marketable.

McGuire, Megan

Institution: *IA - Iowa State University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Abigail Tibben,
Stacy Renfro,
Megan McGuire

Abstract Name: **Producing Datasets: Creating Mock Crime Scene Footwear Impressions Dataset**

One of the fundamental problems in forensic science is a lack of data. Creating datasets representative of casework is a challenge, because it can be difficult to obtain large quantities of images collected under the same protocol and with the same shoes. Though, the data collected in this way can be of significant use for researchers and training within forensic science disciplines.This project's main objective is to create an open-source database containing a sizeable number of high-quality images of shoe impressions. The team at the Center for Statistics and Applications in Forensic Evidence (CSAFE) worked to collect images that could be representative of those found at crime scenes and made publicly available to the broader forensic and research communities. With mixed impression types, flooring, lift techniques, and digital file types, the complete dataset will include nearly 800 shoeprint images contained in more than 1,700 digital files. Our presentation will focus on the best practices for developing a data collection process, writing protocols and publishing open-source datasets, with the intention of reproducibility and details on how/why the project is important, as well as the process we went through while working on it. Attendees will walk away (pun intended) knowing: The significance of larger data sets for researchers and training; Actionable solutions to various obstacles associated with large dataset collection;Essential considerations for writing data collection protocols; and The importance of open-source data.

McHugh, Nell

Institution: *MA - Lesley University*

Discipline: Public Health

Author/Contributors:
Nell McHugh

Abstract Name: **Food is Function: How Nutritional and Culinary Literacy Can Aid in Repairing our Fundamental Relationship to Food**

Problematic relationships with foodare prevalent inmodern society due to a fundamental disconnect between mental health and eating. Many individuals rely on their emotional state to determine meals and mealtimes rather than listening to their bodies. This research includes consultation with licensed therapist Karen Koenig, an expert on eating disorder recovery, and a review of relevant literature. The study's primary data collection tool is a questionnaire on eating behaviors administered via social media. Participants (N=104) shared opinions on how their emotions affect their eating habits, their general level of happiness, the factors that inform meal selections, and the emotions they experience around and during mealtimes. The survey highlighted the prevalence of disordered eating among respondents, as most participants experience complicated emotions surrounding food, which negatively affects their life and health. Additionally, the survey uncovered that many participants were eager for more culinary and nutritional education. Thus, these research findings provide rationale for the design of a community-based expressive therapy program that will develop individuals' culinary and nutritional literacy to repair their fundamental relationship to food and improve their overall mental health.

Mcilhany, Katherine

Institution: *TX - Lone Star College*

Discipline: Business

Author/Contributors:
Katherine Mcilhany

Abstract Name: **Loneliness in the Sea of Stars: Team Building and the Possibility of Mars**

This study investigates composing an effective team for long-term spaceflight to Mars, with an aim to identify the optimal team traits for an isolated, confined, and extreme (ICE) environment. Through a review of team research with multiple Arctic and Submariner missions, this investigation builds upon analog ICE environment simulations (HI-SEAS and Mars-500) by evaluating effective team composition and establishing the essential traits for reducing human error through their frequency in appearance in successful simulations. These findings demonstrate communication is essential for resolving interpersonal issues and emotional expressivity acts as a catalyst to facilitate stronger communication. A stable sense of autonomy contributes to team cohesion in high-stress ICE situations when direct communication with Mission Control is unreliable. The analysis uncovered a number of potential weaknesses in the design of previous studies such as all male participant groups, dependency on analog missions, and small sample sizes. Based on this research, future studies should prioritize a more autonomous environment with Mission Control and the inclusion of specialists to support and reinforce team cohesion and productivity. Furthermore, this research suggests the need to reevaluate the perception of space as a masculine environment through additional team studies with female participants.

McIntier, Cal

Institution: *AR - Lyon College*

Discipline: Art/Music History

Author/Contributors:
Erin McIntier

Abstract Name: **The Sublime in Art**

There is no denying that art has changed drastically since its first conception, from cave drawings to light installations, but throughout the different periods and styles, art has also retained many of the same elements and themes. In this presentation, I explore this connection across time and space through the works “Dovedale by Moonlight”, painted in 1785 by Joseph Wright of Derby, and “Odyssey”, done in 2010 by Cai Guo-Qiang. They’re created hundreds of years apart, coming from different cultures and done in different mediums, but both are elegant landscapes that explore the sense of the sublime – emotion experienced to its fullest potential, that which is both beautiful and horrible. Their works display the continuity of human thought and experience, connecting us to our ancestors. From these works we learn a vital part of what it means to be human, and it is imperative that we use this knowledge to further explore the idea of the collective unconscious – the idea that all of humankind shares a pool of information and memory. The fact that we as humans have the same experience, as displayed in these pieces, no matter the time or place lends itself to this idea of a collective unconscious, which in turn brings us comfort. The universality of human experience and the idea of the collective unconscious is one of the least explored topics in philosophy and art, and my research intends to expound upon the concept by using the shared theme of the sublime to connect the art of present day to the art of the past.

McIrvin, Juliana

Institution: *VA - Virginia Polytechnic Institute & State U*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Juliana McIrvin,
Vittorio Pastore

Abstract Name: **Development of Squeaky DC, a modular and affordable 3D-printed educational quadruped**

Squeaky DCis an updated and more powerful version of TREC Lab's Servo Squeaky, a modular and affordable 3D-printed quadruped robot. Quadrupeds have diverseapplications as research and educational tools, but the higher cost of similar quadrupeds prohibits their widespread use. Squeaky DC has been manufactured using 3D printing technology and materialsto reduce the overall cost as well asmanufacturing time. Due to theuse of 3D printing, Squeaky DC provides design flexibility and can be easily modified without restructuring the whole design. The objective for constructing Squeaky DC is to enhancethe usefulness of the earlier versionfor research and education by implementing the ability to perform more complex tasks such as running and jumping. In this work, the existing servo motors in Servo Squeakyare replaced with more powerful brushless DC motors in Squeaky DC, and Siemens NX CAD software isused to redesign the parts for overall improvement in the design of the quadruped. The new limb design isinfluenced by the anatomical structures of canine and primate limbs. This bioinspired design results in a greater range of motion and improved aesthetics. Several design iterations have been investigatedto finalize the overall geometry and dynamics of the design of Squeaky DC. To ensure the reliability and functionality of the design, the final design of the prototypeissubsequently manufactured through 3D printing with PLA+ material. Further, this quadruped robot will be programmed and extensively tested to prepare it for release as an open-source educational tool. In the future, Squeaky DC has great potential to beuseful for the exploration of fields such associal robotics and swarm/collaborative robotics.

Mckay, Tiaja

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Miranda Ricci,
Courtney Siegel,
Max Hall,
Holly Ball ,
Tiaja Mckay

Abstract Name: **?Childish Platform? or Universal Medium: Making sense of Gen Z?s SnapChat Attitudes and Usage**

In 2022, 44.5% of young people between the ages of 8 and 23 are Snapchat users. Snapchat usage for this generation is higher than all other platforms according to Statistica.While the majority of Gen Z uses Snapchat daily, there is a lack of extant research concerning how Gen Z uses and is affected by their Snapchat usage. Most research into social media use focuses on Facebook and Instagram given they have been the most used platforms until present times (Auxier; Anderson, 2021). As digital natives, Gen Z is used to building and maintaining relationships online. To better understand how Gen Z uses the Snapchat app to build and maintain relationships, this study sought to answer the question, " Why do people use Snapchat." To answer this question, we conducted a series of semi-structured interviews with 14 members of Generation Z. We utilized thematic analysis techniques (Nowell, Norris, White; Moules, 2017)to analyze the interview transcripts. The findings indicate that individuals continue to use Snapchat because it has been gamified (e.g., snap streaks, snap scores, story views, and emojis to indicate friendship closeness). That gamification has worked in conjunction with a fear of missing out to keep users interacting daily. Additionally, the analysis revealed that Snapchat users express a desire to move on from the app as they age, but continue to use it daily as it's the easiest way to maintain connections.

McKee, Joseph

Institution: *PA - Susquehanna University*

Discipline: **Biology**

Author/Contributors:
Joseph McKee,
Matthew Persons

Abstract Name: **The effects of the herbicide glufosinate ammonium on chemically-mediated predator-prey interactions between two wolf spider species**

The herbicide glufosinate ammonium is increasingly used in agricultural systems due to the evolution of glyphosate-resistant weeds. The wolf spider,Pardosa milvina,lives year-round within crop systems in the Eastern United States.Pardosauses silk and excreta cues from the larger co-occurring predatory wolf spider,Tigrosa helluoto avoid being eaten. Upon detection of these cues fromTigrosa,Pardosashows increased freeze responses (tonic immobility) and vertical climbing. Both behaviors increase survival in the presence of a liveTigrosa. This chemically-mediated predator detection and avoidance system ofPardosamay be compromised by spraying herbicides on the soil surface. We tested the effects of glufosinate on chemically-mediated predator-prey interactions among these two spider species. Over three-hour trial periods, we measuredPardosasurvival, activity level, and wall-climbing behavior in the presence of adult male or femaleTigrosa across six treatments where we systematically varied the presence or absence of glufosinate,Tigrosa chemical cues and/or water. We found significant differences in wall-climbing behavior, activity, and survival across treatments. Pardosa survival was lowest on dry substrates lacking glufosinate or predator cues and was highest on substrates with predator cues without glufosinate. Adding glufosinate to predator-cued substrates significantly reduced vertical climbing, increased activity level, and resulted in shorter predation times than substrates without glufosinate. Glufosinate disrupts wolf spider predator-prey interactions by disrupting predator detection and avoidance systems of the prey.

McKeever, Quinn

Institution: *GA - Kennesaw State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Quinn McKeever *Tyler Collette*

Abstract Name: **Self-Esteem Stability's Impact as an Anxiety Buffer on Post Traumatic Stress Disorder**

Anxiety Buffer Disruption Theory (ABDT) explains maladaptive responses to traumatic events. Anxiety buffers such as our self-esteem help keep anxiety at bay when our mortality becomes salient. However, when traumatized individuals do not respond to mortality reminders in a psychologically healthy way (i.e., deploying their anxiety buffers in response) symptoms associated with post-traumatic stress disorder (PTSD) can develop.Self-esteem stability has repeatedly been shown to be a vital variable in psychological wellbeing especially for esteem related disorders such as MDD and BPD. However, there is little research on the influence of an individual's self-esteem stability on PTSD. The relationship between anxiety, trauma, and self-esteem stability as part of ABDT was examined.Adult participants (N = 303) completed a Qualtrics survey designed to assess anxiety buffers, PTSD symptomology, and stability of self-esteem. Germane to this study, the Rosenberg's Self-esteem Scale, which measured the participants attitude toward themselves, and the Self-Esteem Stability Scale, a cross-sectional direct self-assessment, were deployed.Regression coefficients reveal a negative linear relationship between Self Esteem and PTSD symptom severity, and Stability and PTSD symptom severity. The analysis showed that both Self Esteem(B = -.497) and stability (B = -.271) significantly predicted PTSD. However, general self-esteem had a greater impact on the overall model.The data supports ABDT as traumatized individuals showed lower self-esteem indicating the self-esteem buffer may be disrupted. Stability doesn't make self-esteem a more effective anxiety buffer.A second study will be conducted with a comparative sample of individuals with above threshold PTSD symptoms. Participants will complete a similar questionnaire and be screened for probable PTSD (PCL scores < 31). We expect to see self-esteem as a better predictor than stability in the above threshold population for PTSD but not depression. This would support the idea of a unique feature of PTSD among other psychiatric disorders.

McKenna, Emily

Institution: *MO - Missouri State University*

Discipline: **Criminal Justice/Legal Studies**

Author/Contributors:
Emily McKenna

Abstract Name: **Implementing Transformative Justice Into Our Neighborhoods: A Collaborative Model**

As the prison system in The United States serves to punish rather than rehabilitate criminals, victim-offender mediation provides inmates with an opportunity to both repair the community and educate the offender. This paper calls for the expansion of transformative justice services, a subcategory of victim-offender mediation, to identify the systemic issues that lead offenders to commit a crime. By analyzing the works of scholars Howard Zehr and Mark Umbreit, among others, this paper examines how to identify the social issues that create criminals as well as how to heal those impacted. Transformative justice guides the community to combat inequity to supplement the lack of rehabilitation within the criminal justice system. By the community taking accountability, there will be a method of identifying common factors that increase crime and recidivism. Therefore, resources can be funneled to marginalized groups and be accessible to convicts to eventually decrease incarceration rates. This service research paper proposes a collaborative model between The Missouri State University Center of Dispute and Resolution and the Mayor's Commission on Human Rights to expand mediation services in Springfield, Missouri. This expansion will amplify victim-offender mediation services as well as ease the introduction of transformative justice services into their resources offered.

McKenna, Meghan

Institution: *MD - Towson University*

Discipline: **Political Science**

Author/Contributors:
Meghan McKenna

Abstract Name: **World Bank: Villain or Facilitator of Human Development?**

Since its founding, the World Bank has adapted its policies to reflect changing ideas about economic development and poverty alleviation within the international community. Although established to finance long-term development and help stabilize global markets, the World Bank has shifted its focus from strictly macroeconomic analysis to pursuing social development projects in various sectors like education, infrastructure, and healthcare to encourage sustainable economic prosperity. With the overall purpose of poverty eradication around the world as a means to build peace and protect human rights, the World Bank's increased attention to the development of social sectors through conditional lending allows the organization to influence the economic policies within borrowing states as a way to achieve its global economic development goals. However, the debate remains on whether the World Bank's shift from macroeconomic issues to social development has affected the organization's success in alleviating extreme poverty and changed its role in the international community to include developmental policy and norm enforcement.This project seeks to weigh in on this debate by utilizing cases of World Bank development projects prior to and after the change in the organization's internal policies regarding social development issues to exemplify the necessity of the shift and its global implications. Evidence gathered to provide support for my hypothesis includes World Bank, United Nations, and national government documents and statistics and secondary sources such as scholarly evaluations of the World Bank's work and its impacts. Examining the World Bank's work is significant because effective and sustainable development is vital to national and international security and prosperity and the achievement of human rights for all.

McKeown, Connor

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jordan Langlois,
Zach Caterer,
Connor McKeown,
Sam Stumo,
Rahul Gomes,
Michael Walsh

Abstract Name: **Deep Learning and Feature Selection for Classification of Kidney Tissue Microarrays**

Renal function is an essential marker in the classification of renal disease and clinical symptoms of renal failure develop when there is 15% renal function. In this study, we used infrared spectroscopic (IR) imaging to investigate biomolecular markers from renal transplant biopsies. These images are used for the classification of regions of fibrosis from biopsies containing renal cell carcinoma (chromophobe and oncocytoma) and the prediction of fibrotic proliferation using biochemical signatures. IR spectroscopy is a diagnostic approach utilizing human tissue to label biochemical signatures. Images are captured in several hundred wavelengths in the infrared region of the electromagnetic giving researchers access to more information than traditional RGB images captured by a microscope. While images captured in several bands are great for disease diagnosis, it poses significant challenges for manual cell review by a pathologist. To address this issue, a fully automated pipeline for image processing is being explored. Preliminary research involves identifying feature importance using various algorithms, each of which returns the significant spectral bands necessary for detecting regions of fibrosis. The outputs are ranked and compared to find the first 150 most important features. After feature selection, a deep learning model called UNet will be applied for the classification and identification of fibrosis. Our results will then be compared to the discriminate analysis of the Bayesian classification used in clinical applications.

McKeown, Mia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Social Work**

Author/Contributors:
Mia McKeown

Abstract Name: **Impact of Title IV-E Education on Perceptions of Preparedness in Child Welfare Workers**

The present study considers the impact of a specialized child welfare training program, known as Title IV-E, on the preparation and retention of public child welfare workers. Participants (n=6) were graduates of UW-Eau Claire's Title IV-E Child Welfare Training program and at the time of the study were employed in public child welfare between 8-24 months. A mixed methods approach, consisting of an online survey based on the Comprehensive Organizational Health Assessment (COHA) and a semi-structured interview administered by student researchers, examined participants' opinions on peer support, supervision, job satisfaction, intent to stay, self-care, and impact of COVID-19 on their child welfare work. Participants' were also asked about the degree to which they were prepared for different facets of child welfare work including working within a bureaucracy, engaging in macro-level work, interfacing with the juvenile justice system, and participating in permanency planning.Analysis of the findings indicate that the majority of participants linked experiential learning opportunities and exposure to child welfare-specific course content as undergraduate students to their level of preparedness for work in child welfare. Participants varied in their responses to questions related to the degree to which they were able to manage their current workload, the level of support peer and/or supervisory supports present at their place of employment, and degree to which they implemented self-care strategies to cope with work-related stressors. The information garnered from this study seeks to evaluate UW-Eau Claire's Title IV-E program in order to enhance graduate preparation for work within child welfare.

Mckinney, DeCarlos

Institution: *GA - Kennesaw State University*

Discipline: Education

Author/Contributors:
Chinasa Elue *Cristen Canavino* *Christopher Gardner,*
Sarah Hampton *DeCarlos Mckinney* *Zoe Brown*

Abstract Name: **Reimagining College Support: A Critical Exploration of the Impact of Grief and Loss on the Experiences of First-Year College Students**

Student attrition is a rising concern in higher education given the various challenges that have arisen over the past couple of years. The offset of the COVID-19 pandemic, the racial justice movements, and the current social-political climate have significantly impacted our college students like never before. Of growing concern is the rising mental health crisis that is sweeping through higher education which warrants an immediate and intentional response. Further, students are currently facing dire financial constraints, food and housing insecurities, and many other challenges that complicate their college experiences. As freshman students are now experiencing college for the first time, their experiences may vary drastically from their predecessors. Specifically, current first-year students' college transitions are muddied from their various high school experiences that may have been a remote, hybrid, or in-person with some variation of security measures. Further, the grief, loss, and trauma first-year college students have experienced during the pandemic warrant special attention as we are contending with the types of resources and support, they need to matriculate and complete their degrees. The remnants of grief and trauma from the pandemic still linger and are impacting the college experiences of first-year students and their abilities to navigate their academic and professional goals. Hence, through a qualitative research design, our research explores the lived experiences of first-year college students. Specifically, the research question explored in our study is: How or to what extent has grief and trauma from COVID impacted the educational journeys of first-year students? The aim of this research is to provide an important opportunity to investigate how to better support college students as they move through collegiate experiences.

Mckinney, Luke

Institution: *KY - University of Kentucky*

Discipline: Nursing/Health Science

Author/Contributors:
Luke McKinney,
Jamie Sturgill

Abstract Name: **Ceramide as a novel biomarker in Acute Respiratory Distress Syndrome?**

Acute respiratory distress syndrome (ARDS) describes a syndrome of acute onset, bilateral, inflammatory pulmonary infiltrates and impaired oxygenation. ARDS results in a life threatening, rapidly progressive illness and occurs in critically ill patients.Imaging shows bilateral opacities, showing the extent of physiological damage. Severity can be quantified by the ratio of the partial pressure of oxygen to the fraction of inspired oxygen, or PaO2/FiO2. A ratio of 200 mmHg to 300 mmHg is considered mild, a ratio of 100 mmHg to 200mmHg is moderate, and a ratio of below 100 mmHg is severe. ARDS can be caused by several diseases, including but not limited to infection or injury. Despite increased understanding of ARDS, we still lack good biomarkers for diagnosis and treatment. Our lab is examining the role of ceramide in lung disease. Ceramide serves a pivotal role in regulating cell structure and cellular mechanical properties which are especially important in the lung. Our hypothesis is than an increase in ceramide concentration levels in ARDS patients would be a predictor of disease severity and/or mortality. In a small cohort of patients, we examined levels of sphingolipid species in the bronchoalveolar lavage fluid (BALF) by liquid chromatography electrospray ionization-tandem mass spectrometry (LC-ESI-MS/MS). We compared these levels to clinical variables such as severity of illness, ICU length of stay, mortality, etc. We show a statistically significant correlation toAcute Physiology and Chronic Health Evaluation (APACHE) scores thus highlighting a potential novel role for ceramide in ARDS.

McKnight, Scout

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Grace Schutte,
Scout McKnight,
Kate Hinnant,
Helena Sumbulla

Abstract Name: **You?re Reading What, Now? The History of Book Banning in the U.S. and Its Societal Consequences**

Book banning is on the rise in the United States, with bands of parents and political groups protesting the exclusion of titles in classrooms. Parents are concerned about what their children are reading in school, at what age, and in what way—School Board meetings, as a result, have become literary bloodbaths. Our purpose is to understand what has brought on this latest surge of challenges; what the societal consequences of banning books in the U.S. may be; and, to create an applicable curriculum on Book Banning for classrooms. To gain a better understanding, we went to the texts themselves: By reading under-fire titles, we learned the arguments against them and discussed their controversies with students through our Subversive Book Club. Through our research and discussions, we found that books detailing the experiences of POC and LGBTQIA+ individuals, social issues, and historical events have been targeted most in recent years; however, the claims against them focus on explicit content and strong language. We believe this to be a way for parents and organized political groups to remove books that do not align with their ideological ideals or make them feel uncomfortable. But, this raises the questions of censorship and what we are “allowed” to teach students. Should we take additional measures to ensure their comfort at the expense of accuracy and truth? In the curriculum we are designing, we broach these questions as well as provide thorough background information on a number of banned and challenged books, along with companion discussion questions created to get students thinking more proactively about what they are reading. This work is significant because words have power, as do the stories we tell—to censor and remove them and their lessons are to withhold the most authentic education we can offer.

McLean, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Andrew Lindaas *Grace McLean* *Clare Palen*
Haoran Zhu

Abstract Name: **Using Survey Data to Report on Low-Income Household Experiences Shopping at the Eau Claire Downtown Farmers? Market**

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers’ markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers’ markets. The Eau Claire Downtown Farmers’ Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. Administrative data on program utilization suggests that most SNAP households shop at the ECDFM using the MMP relatively infrequently. This poster presents data from surveys of SNAP shoppers at the ECDFM in 2022 (N=349) to learn more about their experiences using the program including what limits their shopping at the market and what might increase their ability to shop at the market. Our results indicate that the most significant limitations to shopping at the ECDFM were the market location/hours, SNAP benefits running out and just not remembering. Correspondingly, the most mentioned things that would encourage more frequent shopping at the ECDFM were expanded market locations/hours, a larger match amount and also being reminded. Among our other key findings are that the ECDFM MMP provides many benefits including reducing food insecurity among EC SNAP households. This poster is connected to another submitted poster analyzing a variety of administrative data from recorded transactions of SNAP shoppers using the ECDFM MMP.

McLendon, Jill

Institution: *GA - University of Georgia*

Discipline: English/Linguistics

Author/Contributors:
Jill McLendon *Michael Wolfman*

Abstract Name: **Filling the Gap: The Correlation Between Particle Verbs and Transitivity in German and English**

Within linguistic inquiry, grammaticalized phrases are frequent phenomena that present unintuitive challenges for acquisition and translation. Currently, there is limited literature on the syntax of particle verbs; most extant research instead centers around acquisitional corpus study. In order to fill this gap and investigate the patterns underlying such phrases, this paper analyzes the correlation between particle verbs and their transitivity patterns in German and English, as sampled in two corpora, the enTenTen20 (Jakubíček et al., 2013) and the deTenTen20 (Jakubíček et al., 2013).Particle verbs are ubiquitous verb + prepositional adverbial constructions (e.g., take up) that output emergent semantic properties distinct from their constituents (Biber et al. 1999, qtd. in Liu 2011). German exhibits this construction in separable verbs ("trennbare Verben"), where the preposition prefixes to the main verb when not in clause second position. Transitivity identifies the specific number and type of objects that a verb takes, as in pick (it) up, where it undergoes the verb.In order to investigate any statistical connections between the grammaticalization of phrasal verbs and transitivity patterns, a list of particle verbs in each language was collected, with the transitivity of their non-particalized lemmas labeled with one of five categories: monotransitivity, ditransitivity, ambitransitivity, pseudotransitivity, and intransitivity. Using the SketchEngine corpus, the frequencies of each verb were gathered and normalized per million. Then an ANOVA test was run, resulting (F5 = 0.376, 0.861) in no significant relationship between the verb and transitivity type across both the English and German data; however, an ANOVA test on the English data alone approached significance (F4 = 2.796, 0.0749). This suggests that the particalization mechanisms could differ cross-linguistically, such that English transitive verbs are more likely to generate particle verbs where German verbs are not. Additional research is needed to confirm this tentative conclusion.

McMichael, Tristan

Institution: *GA - Kennesaw State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Tristan McMichael,
Awatef Ergai,
Adeel Khalid,
Asia Douglas

Abstract Name: **The Effect of Gaming on Novice Pilots**

Global aviation is a pilot shortage, and by 2032, it is expected that international aviation will be 80,000 pilots short. Hence, there is an immediate need to identify ways to expedite pilot training. Researchers have found that gaming positively impacts cognition and hand coordination. Specifically, the abilities of people with expertise levels in video gaming have significantly improved performance scores in many flight simulators. However, these studies lack generalization due to the small sample size. This study investigates whether prior gaming experience impacts the flight performance of novice pilots using a large sample size, flight simulator, and eye-tracking metrics. We recruited two student groups based on their gaming experience: students with little or no prior gaming experience and students with significant gaming experience. Both groups received initial training on basic operations and controls of an aircraft by watching a video and using a flight simulator. After the initial training, students were asked to fly a straight and level mission on the simulator, during which participants wore eye-tracking glasses to record their visual attention. Moreover, we used a five-scale rubric to evaluate their flight performance. The eye tracking data were analyzed using iMotions software in addition, we measured inter-rater reliability for data generated from four coders who assessed the flight performance of the participants using the rubric. Initial findings show that experienced gamers accomplish the mission with higher flight performance levels than novice gamers and had significantly lower dwell times on areas of interest and saccade counts. Results may assist in identifying good candidates to become pilots in addition to creating a fast-track pilot program for experienced gamers.

McMurry, Haylee

Institution: *TX - Tarleton State University*

Discipline: **Social Work**

Author/Contributors:
Shelby Sanders,
Haylee McMurry,
Madison Hill

Abstract Name: **Limited Access to Rural Community Schools**

Sensitive topic agencies have limited access into the education system and are unable to inform school aged children on sensitive topics. Due to the limited ability agencies who facilitate sensitive topic programs contain in the rural community school systems, student researchers introduced a question pertaining to the issue. How do educators in rural communities perceive agencies who facilitate sensitive topic programs? This study aims to understand factors related to sensitive topic agencies. Through a survey, the student researchers collected mixed-methodological data with a concentration on quantitative data. The overall targeted sample size was 75 educators who have worked in rural community school systems. After speaking with individuals, researchers can reach out to schools as a whole. They can practice at a mezzo level by contacting the school about what individuals inside their facility believe is appropriate to be taught to the students. Reaching out to the school can allow researchers to obtain an approved number of topics that are allowed to be presented to the age group indicated. This will then allow agencies to provide some information regarding sensitive topics to schools. In terms of the macro level, agencies often branch out into counties. The student researchers found that a majority of female participants did report a positive perception of sensitive topic agencies, and male participants reported limited knowledge. They also found that age did not matter when looking at the perceptions the educators have on sensitive topic agencies.

McMurtry, Jammie

Institution: *VA - Longwood University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Jammie McMurtry,
Antonio Havery,
Sarah Porter

Abstract Name: **Analysis of petroleum pollution along the Virginia shorline**

Industrialization is one of the major global contributors of petroleum pollution. Petroleum pollution along the Virginia coastline has caused many environmental issues in marine ecosystems, including toxicity to marine organisms and damage to the complex food web in the Chesapeake Bay. The goal for this research project is to study and develop methods using a variety of analytical instrumentation, including fourier-transform infrared spectroscopy (FTIR), gas chromatography-mass spectrometry (GC-MS), and high-performance liquid chromatography (HPLC) for the analysis of offshore pollution in natural waters, including the Bay and upstream rivers. Additionally, synthetic biology techniques will be used to investigate the possibility of bioremediation as a clean-up technique. The state of Virginia has largest naval station in the world, Naval Air Station Norfolk, as well as an economy that thrives off of marine ecosystems. Therefore, it is crucial for chemists to fully understand the environmental impact of petroleum pollution on the Chesapeake Bay.

McNally, Brenya

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Brenya McNally,
Sydney Schroeder

Abstract Name: **STD-NMR Analysis of Xanthine Oxidase Binding to Small Molecules**

Analysis of saturation transfer difference (STD) from nuclear magnetic resonance (NMR) spectroscopy is a popular and powerful method for determining ligand interactions with proteins. Xanthine Oxidase (XOD) is an enzyme involved in the metabolism of purine to uric acid, with two intermediates in the pathway. High levels of uric acid (hyperuricemia) are considered harmful and can lead to gout, renal damage, and other diseases. Inhibitors like allopurinol are used as a drug to reduce or prevent uric acid by binding to XOD thus preventing the catalysis. This study analyzed the interactions between different small molecules with the enzyme XOD, with the goal of finding a potential inhibitor. The STD NMR technique is used to study the binding of XOD to two compounds (4-aminopyrazolo[3,4-d] pyrimidine (APPy) and 4-amino-1H-pyrazolo[3,4-d] pyrimidin-6-ol (APPO)). The STD NMR spectra showed that both compounds have interactions with XOD. Computational docking of these compounds to XOD showed that they have binding modes similar to uric acid and allopurinol. Both of the results will be presented at the conference.

McNally, Delaney

Institution: *CO - University of Colorado at Boulder*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Delaney McNally *Laura Macdougall* *Kristi Anseth*

Abstract Name: **Reversible Intracellular Gelation Reduces MCF10A Spheroid Growth**

Intracellular gelation achieved with bio-orthogonal strain-promoted alkyne-azide cycloaddition (SPAAC) click reactions can induce a quiescence state in mammalian cells.Intracellular gelation is achieved through a lipofectamine-transfection of SPAAC functionalized poly(ethylene glycol) (PEG) macromers, which are able to spontaneously crosslink in the cytosol. The intracellular crosslinked network increases the viscosity of the cell, resulting in reduced cellular activity. Here, the complexity of the biological model has been increased to explore the effect of intracellular gelation on the formation of 3D spheroid model. When transfected MCF10A cells were encapsulated in a synthetic MMP degradable thiol-ene PEG hydrogel, a reduction in spheroid growth (47%) was observed. This observation was replicated in a proteinaceous hydrogel, Matrigel,where the spheroid growth decreased after transfection with SPAAC macromers. In addition, when cultured in Matrigel, spheroids could be transfected after formation. The resulting intracellular network suppressed spheroid growth with a similar reduction exhibited in the synthetic thiol-ene matrix. To test for reversibility in the system, a photodegradable nitrobenzyl azide was incorporated into the SPAAC macromers, and degraded after formation of the intracellular network by exposure to UV light. Once degraded, proliferation and a return to normal spheroid growth resulted. With the reversible nitrobenzyl component incorporated into the intracellular network, a decrease in spheroid growth (30%) and a size reduction (20%) was measured. Upon exposure to light to induce degradation, spheroid growth returned to a rate level comparable to controls, while the spheroids not exposed to light (e.g. intracellular gelation remaining intact) remained smaller (50%). Intracellular crosslinking and its reversibility have applications in biostasis, and here, used a 3D tumor cell model and novel materials to induce quiescence and its reversal, all while maintaining cellular viability

McNamer, Kelly

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Abigail Lewis *Vasavi Chandramouli* *Kelly McNamer,* *Rebecca Jarzynski*

Abstract Name: An Analysis of the Representation of Gender within Children's Books at a University CSD Clinic

Speech-language pathologists are increasingly called to provide culturally and linguistically responsive services (ASHA, n.d.). As a part of meeting this call, SLPs are tasked with using culturally responsive materials, including the use of books that are representative of a wide variety of identities across race, ethnicity, gender, religion and ability (Harris; Owen Van Horn, 2020). Research investigating gender representation within children's books has overwhelmingly found the presence of underrepresentation of women along with pervasive gender stereotypes. The purpose of this research is to analyze the quality of gender representation within children's literature at a university clinic. The research question the study aimed to answer was, "what roles do female and male characters assume in books found within the children's literature at a Midwestern University SLP Clinic, and how do these roles relate to traditional gender stereotypes?"To complete this research project, an annotated bibliography was completed to gain adequate background knowledge. Next, a checklist for analyzing gender representation was formed to code books and pilot data was collected. A random sample of 262 books within the library have been analyzed. It was found that the presence of male main characters was higher than female main characters within narrative and expository books. Another finding was that nonhuman characters are more common in children's books and have male overrepresentation at a much greater rate than books with human characters. As a next step in this study, the authors of this study will further review the 262 books that have been analyzed thus far and conduct a qualitative analysis of the stereotypes and gender roles. Findings will inform practices for evaluating clinical materials to ensure quality representation of gender within materials used for assessment and intervention services.

McNerney, Danielle

Institution: ***MD - Towson University***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Danielle McNerney

Abstract Name: Language Matters! What Newspapers Get Wrong in Wrongful Conviction Reporting.

According to The Innocence Project, Black people comprise 40% of the 2.3 million incarcerated people in the U.S. and 58% of wrongful convictions, despite comprising only 13% of the U.S. population. One can ask why these imbalances exist amongst the imprisoned and wrongfully convicted population and whether racial biases are the sources of a disproportionate amount of imprisonments and wrongful convictions of Black people. If so, then one must ask what is causing, perpetuating, or contributing to racial biases in criminal justice, especially wrongful convictions which rob innocent people of their freedom. A potential cause of racial biases and subsequent racial injustice through wrongful convictions is the media's portrayal of Black people as criminals, leading the public to associate Black individuals with guilt. To reveal any causal or correlating factors, this study first aims to detect whether there are differences in how the alleged crimes and exonerations between Black and White individuals were covered by journalists. To answer this question, I studied 100 exonerations via an analysis of newspaper articles from the 1960s-present. These articles were examined to determine if there are statistically significant differences in the frequency of race, employment, and prior convictions mentioned between Black and White exonerees. In this follow-up project, an online survey including visuals and text reporting will examine how readers perceive initial reports of crimes (allegedly) committed by eventually exonerated individuals. Hoping to include at least 75 surveyed people in Fall 2022, this project aims to explore how differences in information, especially regarding race, included within media crime reports influence readers' perceptions of whether an individual is guilty of a crime across races.

McPike, Emily

Institution: *VA - James Madison University*

Discipline: Physics/Astronomy

Author/Contributors:
Emily McPike

Abstract Name: **Mid-Infrared Variability of Galaxies Surveyed for Water Megamaser Emissions**

Astrophysical masers occur by the stimulated emission of molecules ininterstellar objects. When detected in galactic centers, they prove crucial to our understanding of how the universe formed and continues to evolve. Water masers found in the centers of disk-like galaxies are a unique tool for probing the properties of supermassive black holes and providing direct distance measurements to extragalactic astrophysical sources. Unfortunately, luminous water masers are extremely rare, inciting the push to find more. Considering this, it is crucial to further our understanding of which galaxies this variety of maser emission can occur in and investigate the conditions in the centers of these host galaxies. Currently, there is tentative evidence that suggests a connection between the maser pumping mechanism with the accretion of matter onto supermassive black holes in galactic centers, the region known as the active galactic nucleus(AGN). Herein, we investigate the degree to which AGN activity, as probed by mid-infrared variability, correlates with maser emission and its properties in galactic centers. Employing the mid-infrared and its properties offers the advantage of being less sensitive to cosmic obscuration, therefore revealing AGN signatures that are missed in other wavelengths. We work here with the Megamaser Cosmological Project (MCP), which offers an up-to-date list of galaxies that have been surveyed for water maser emission, as well as multi-epoch mid-infrared data from Wide-field Infrared Survey Explorer (WISE), and present comprehensive comparative analysis of variability in maser host galaxies as and non-hosts. These results constrain the possibility that AGN activity may provide the necessary seed radiation for central maser emission in galaxies and offer new opportunities to guide future surveys.

McQuade, Lauren

Institution: *MN - Gustavus Adolphus College*

Discipline: Nursing/Health Science

Author/Contributors:
Jessica Anderson,
Lauren McQuade

Abstract Name: **Acute Fluid Intake and its Effects on College Students' Body Mass Index**

Background. Body Mass Index (BMI) is a value derived from height (m) and mass (kg) measurements. BMI is broadly used to categorize individuals based on their tissue mass and height for purposes of medical screening, health information, and policy-making. A multitude of variables (e.g., race, gender, muscle mass, exercise, nutrient intake) can affect an individual's mass which alters their BMI. Individuals preparing for body fat screenings, including BMI measurements, are typically advised to abstain from drinking fluids four hours prior to testing to avoid inaccurate measurements. Few studies look at the effects of acute intakes of different types of beverages on BMI during a testing period. Statement of Purpose. The purpose of this study is to 1) examine the effects of acute fluid intake on college students' body mass index, and 2) investigate the relationship between beverage type and body mass index. Methods. Participants will be instructed to fluid-fast for twelve hours prior to testing. Participants will be randomly assigned into three groups: Water Intake (WI), Gatorade Intake (GI), or Control (C). Height will be measured prior to the ingestion of fluids. Participants will then consume their assigned beverage every thirty minutes for a total of three times. The amount of liquid ingested will be determined by their assigned sex at birth (Female: 75 mL/round; Male: 100 mL/round). The BMI formula, kg/m^2 = BMI, will be used. Data Analysis. Statistical analyses will be performed with SPSS Statistics 27.0.1.0. Descriptive statistics will capture critical patient characteristics. The BMI values will be compared using an ANOVA. Discussion. The researchers anticipate the GI will have significantly larger changes in BMI throughout the study compared to the WI and C groups.

McWilliams, Mikayla

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mikayla McWilliams,
Priyatha Premnath

Abstract Name: Nano-indentation Based Analysis of Healing Murine Callus

During the reparative phase of bone healing, a thick mass of callus forms around the bone ends, stemming from the fractured hematoma. The callus begins soft, composed of fibrous tissue and cartilage, and develops over time to become a hard callus. We have developed a novel method to differentiate the mechanical properties of soft tissue (including cartilage) and bone at different points during the healing cascade in the tibia of mice. The fractured tibia was attached to discs through bone cement. The fractured tibia is adjusted till the flattest part of the healing callus is at the highest point. Next, the sample is placed in the Agilent Nano Indenter G200, and the focus is adjusted to the flattest part of the callus. The Nano Indenter is run at night so no outside vibrations can impact the results. Following tests displacement into the surface, load on the sample, time on the sample, harmonic contact stiffness, hardness, and modulus were retrieved. We applied the Oliver-Pharr method to calculate the average hardness, average modulus, and elastic modulus for each indentation [1]. Through the elastic modulus results, we were able to determine where based on the indentation pattern, and at what week of the healing process the objects' resistivity to elastic deformation is greater on the callus thus determining the parts of the callus are bone compared to cartilage.

Meckstroth, Helen

Institution: *PA - Moravian University*

Discipline: Sociology

Author/Contributors:
Helen Meckstroth

Abstract Name: Social Media Usage and Levels of Consumerism of College Students in the United States

The increasing sophistication of the Internet and technological devices, especially those developed after the turn of the 21st century, have opened previously unseen pathways of communication. Social media usage has steadily increased over the past two decades with ever-changing and expanding opportunities to connect with other people. Companies and brands have kept up with this move to online interaction and as a result, they are able to market to a wider audience instantly and at any time. Other side-effects of social media including social comparison and lower self-esteem may also indirectly influence people's consumerism levels. This project will examine social media usage in college-age students in the United States and how this usage may impact their levels of consumerism. The primary method of data collection is a survey that will be distributed to college-age students at Moravian University, a small, liberal-arts college in the United States. Expanding upon already existing studies of social media, this study aims to provide a more specific and detailed picture of how different social media platforms might affect levels of consumerism. Currently, while there have been numerous studies on social media and its various effects, many have been limited to a small group of social media platforms, specifically Instagram, Twitter, and Facebook. This study includes a wider range of platforms, including Tiktok, which has become popular over the past few years. This study will also examine the relationships between social media usage, self-esteem levels, and materialism across different demographic groups.

Medina, Vianca

Institution: ***TX - Tarleton State University***

Discipline: Social Work

Author/Contributors:
Sydney Mangold,
Savannah Bynaum,
Erica Duran,
Vianca Medina

Abstract Name: Diversification Factors Affecting Meal Service Recruitment

This study focuses on exploring the impact of diversity at Meals on Wheels and the factors involved in the limited number of participants of color who are part of the underserved population.There are clients that are unable to communicate with the agency because of language barriers.The type of research design is exploratory. The research explores a new topic and seeks to discover the effect that Meals on Wheels staff has on clients.Researchers created a 17-question survey that included open ended and closed ended questions to ask 100 community residents of color.

MedinaDiaz, Keisha

Institution: ***MD - Bowie State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alvin Atuonah *Keisha Medina Diaz* *Zhayne Hackett*
Supriyo Ray *Jason Abraham*

Abstract Name: Drug screening using Bioinformatics based tools to identify lead compounds against Naegleria Fowleri

Naegleria fowleri, also known as the brain-eating amoeba, causes primary amoebic meningoencephalitis (PAM), that affects the central nervous system (CNS). Patients with N. fowleri infection are unresponsive to current treatments with a survival rate of only 3%. Thus, it is essential to identify novel pharmacological targets and screen drugs. Naegleria fowleri protein library was explored to identify potential drug targets that have least similarity to any known human protein. Nfa1 (Uniprot: Q9NH76) was identified as one of the potential targets because it has no human homolog. Amoebae have cell surface features called feeding cups that are used to consume food, including host nerve cell membranes. Food cups are created during phagocytosis which includes the Nfa1 protein facilitating absorption through the cup-like structure. Nfa1 protein is involved in the formation of food vacuoles, locomotion, and importantly, also serves as an oxygen-binding protein. It is hypothesized that Nfa1 inhibition would arrest locomotion and restrict their foraging capacity, starving the amoeba to death. Based on the hypothesis, Nfa1 structure was predicted using Alphafold and the protein structure was minimized prior to docking. The minimized structure was validated using the Ramchandran plot. The Molprobity score was 0.83 with 2.5% of outliers towards C-terminal of the protein. Using various bioinformatic tools, binding pockets of Nfa1 were predicted. Drug library was screened after docking in Pyrx. Potential ligands that showed strong binding affinity and good pharmacokinetic properties were selected. Ligands were validated based on the blood brain barrier crossing, good GI absorption, ADME analysis, toxicity, and bioactivity profiling. The top compounds showed high binding affinities ranging from -7 kcal/mol to -9 kcal/mol. Selected compounds will be validated using toxicity assays against Naegleria and human cell lines for future studies.

Meguro, Victoria

Institution: *FL - The University of Tampa*

Discipline: **Public Health**

Author/Contributors:
Hailey Daves *Victoria Meguro* *Emma Kotelnicki*
Olivia Osseiran *Mary Hart* *Claudia Aguado Loi*
Melissa Williams

Abstract Name: **Beyond Translation: A Qualitative Inquiry Study for Refining a Culturally and Linguistically Adapted Health Coach Intervention for Latina Breast Cancer Survivors**

Background: Latina breast cancer survivors historically lack linguistic and culturally tailored coping and management interventions. Traditional adaptation of English education materials for a Latina audience often address surface cultural features such as language, but lack nuances garnered through formative research with the target audience. This study implemented a collaborative community-academic partnership to develop a multi-module health coach intervention and coinciding workbook tailored to the needs of Latina breast cancer survivors (LBCS). All materials used in development were adapted from nationally recognized guidelines for cancer survivors. Thus, this study aimed to gather qualitative data assessing cultural relevance of the transcreated (translated + culturally adapted) health coaching intervention for LBCS. Methods: Following best practice for cultural adaptations, English materials were reviewed by cancer survivorship experts and transcreated into Spanish. Two focus groups (6-8 participants each) were held in Spanish to assess the cultural relevance of the transcreated materials to LBCS. Focus group guide questions were informed by two theories (Social Cognitive Theory, Help-Seeking Behavior Model), learner verification (a methodological approach for education message design). Guide also included questions on feasibility. Transcripts were translated into English and analyzed using thematic analysis. Community expert review confirmed findings.Results/Discussion: Emerging themes included content relevance, applicability, saliency of messages for comprehension, and areas for further refinement.Verification checks with our community partner confirmed content revision and solutions for incorporating participant feedback in future implementation. Data from focus groups allowed for further verification of acceptable content and method expansion prior to piloting with LBCS as a final refining step in the transcreation process. Conclusion: Reflection of cultural reality during program development is crucial for intervention adaptation in diverse populations while building social capital. Transcreation allowed for a collaborative process guided by the integration of cultural nuances, while participant first-hand experiences led modules toward cultural accuracy.

Mehdi, Zehra

Institution: *PA - Duquesne University*

Discipline: **Biology**

Author/Contributors:
Zehra Mehdi,
Jakboi Deslouches,
Sarah Woodley,
Jill Dembowski

Abstract Name: **The Effects of Salamander Skin Peptides on Microbes, Virus, and Red Blood Cell Hemolysis for Future Therapeutic Treatment**

Herpes simplex virus type 1 (HSV-1) infects the majority of the human population, causing negative consequences like meningitis and encephalopathy. Current treatment options run the risk of antiviral resistance. A promising new treatment option is antimicrobial peptides (AMPS).AMPs are found in all vertebrates, including salamanders. We hypothesized that skin peptides from Hellbender salamanders (Cryptobranchus alleganiensis) have antimicrobial, are not cytotoxic to human cells, and antiviral properties. MicroBCA assay was used to determine the concentration of Hellbender peptides. Growth Inhibition Assays (GIAs) were conducted to determine rather or not these peptides had antimicrobial properties againist E. coli and S. Aureus. CellTiter Glo Assay tested the peptides' cytotoxicity on human cell lines. Viral Yield Assay determined if crude mixtures of skin peptides are virucidal and inhibited the viral life cycle of HSV-1. We found that the crude peptides have relatively low cytotoxicity to human cells. Therefore, if the peptides are antiviral, they inhibit the virus not the cells in the Viral Yield Assay. We found that the crude peptides have antimicrobial,are notcytotoxicto human cells, and do not have antiviral properties. Due to the promising antimicrobial properties of Hellbender skin peptides, I am currently further examining the cytotoxicity of these peptides ind ifferent cell types including human red blood cells. Our future aims are for these Hellbender peptides to help found new therapeutic antibiotictreatments.

Mehta, Rehan

Institution: *NY - Manhattan College*

Discipline: Mathematics

Author/Contributors:
Tetsuya Kawakita,
Rehan Mehta

Abstract Name: **Modeling human observer detection for varying data acquisition in undersampled magnetic resonance imaging (MRI)**

Undersampling in the frequency domain (k-space) in magnetic resonance imaging (MRI) accelerates the data acquisition. We used a fixed one-dimensional undersampling factor of 5x where 20% of the k-space lines are collected. The fraction of the low k-space frequencies that are fully sampled were varied from 0% where the primary artifact is aliasing to 20% where the primary artifact is blurring. We conducted a human observer two-alternative forced choice (2-AFC) task with a known signal for each of the acquisitions. In the 2-AFC study, a synthetic signal was placed in the center of one of two anatomical backgrounds of the brain. The observer had to choose which of the two images had the signal. Each of the 4 observers conducted 200 such trails for each experimental condition. In the 2-AFC studies, it was clear that the observers performed better with more low frequencies being fully sampled. In other words, blurring is preferable to aliasing for this task. Our goal is to develop a mathematical model that will predict these experimental results. To achieve this, we modified the three-channel sparse difference of Gaussians model observer (S-DOG). The S-DOG model uses frequency domain channels to model the human visual system. Adding a fourth channel improved our prediction of human performance. Noise models are used to account for uncertainty in human decision making. We implemented an independent noise model, rather than the previously employed proportional noise model. The independent noise model introduces the same uncertainty for all images and the proportional model has noise that depends on the image. The independent noise model more accurately predicted the average human performance. Our future research includes modeling a detection task where the observer needs to search for the signal in the anatomical background and developing a mathematical model to predict the experimental results.

Mehus, Andrew

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Trittelwitz,
Jessie Bielak,
Reece Lisowski,
Andrew Mehus,
Madilyn Tokarski

Abstract Name: **Yearly Survival and Growth Rates of Propagated Fatmuckets (Lampsilis siliquoidea) in Central Wisconsin**

Freshwater mussels are key members of riverine ecosystems and are crucial for improving water quality. Mussels serve as valuable indicator species and suffer from many environmental disturbances, but despite their importance, large gaps remain in knowledge of freshwater mussels in Wisconsin. We measured the survival and growth of mussels exposed to ambient conditions in two streams in Central Wisconsin. Both selected streams included those that support diverse mussel assemblies. On October 29th, 2021, we received 120 Fat Muckets (Lampsilis siliquoidea) from the Genoa Fish Hatchery, measured, then released them into suitable areas on the Mill Creek; the Plover River Near Stevens Point, WI. Before release, mussels at the Mill Creek site averaged 1.853 cm in length, 1.03 cm in width, and 0.52 cm in thickness. At the Plover River site, mussels averaged 1.859 cm in length, 1.068 cm in width, and 0.546 cm in thickness. We utilized silos to encompass the 1.5-year-old mussels. Each site has 1 silo, containing 15 individuals per silo. Our objective is to determine seasonal survivorship and growth rates throughout our year-long study. Experimentation at these sites will provide an indication to determine which areas are suitable for future reintroductions. We expect 1) Mussel growth and survival will be significantly reduced in the winter months, compared to the summer months. 2) Mussel growth and survival will be significantly different between the two sites. These sites were measured monthly beginning April 21st and lastly October 21st, 2022. This is part of an ongoing study through the University of Wisconsin – Stevens Point's student chapter of The Wildlife Society.

Meikle, Abigail

Institution: *OH - Miami University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Abigail Meikle

Abstract Name: **Do Drinking Motives Mediate the Relationship between Anxiety Sensitivity and Alcohol-related Blackouts among College Students**

Anxiety sensitivity is the fear that anxiety symptoms are indicative of greater harm, and is a risk factor for heavy alcohol use and substance use disorders. In existing research, there are gaps on the exact alcohol-related consequences and how anxiety sensitivity may be related to those consequences. One important gap is the link between anxiety sensitivity and alcohol-induced blackouts (alcohol-induced amnesia). Blackouts have negative emotional and social consequences for college-aged students. Drinking motives may be a pathway through which anxiety sensitivity could be related to blackouts. Drinking motives regulate the final decision to drink or not drink, meaning that they are the most proximal factor for engaging in drinking. The current project proposal includes a two-aim study to address the relationship between anxiety sensitivity, drinking motives, and blackouts. Aim 1 will focus on evaluating the potential relations between alcohol sensitivity and alcohol-related blackouts in college-aged students while examining the possibility of drinking motives being a mediating factor underlying that relationship. We hypothesize that there is a positive relationship between anxiety sensitivity and blackouts through drinking motives. Aim 2 is to evaluate if there are additional potential modifiers that could amplify or buffer the relationship between anxiety sensitivity, drinking motives, and blackouts such as gender and perceived norms. The data for Aim 1 will be taken from an annual student health survey. The participants were recruited through email invitations at a mid-sized midwestern university. Both aspects of the study will use questions from the Anxiety Sensitivity Index to measure Anxiety sensitivity, the Modified Drinking Motives Questionnaire to measure drinking motives, and lab-created questions to measure blackouts. Aim 2 will also involve self-report demographic questions as well as the Drinking Norms Rating form and the Injunctive Norms Questionnaire to measure perceived drinking norms. Data analysis is ongoing. Implications will be discussed.

Meis, Caroline

Institution: *IL - Loyola University of Chicago*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kimberly Davenport,
Caroline Meis

Abstract Name: **Paternal Family Versus Maternal Family Involvement for Children in the Foster Care System of Chicago**

Prior work on the impact of parenting on children's emotional and behavioral outcomes focused on maternal parenting and continued this path when exploring extended family involvement. When research began demonstrating the critical role fathers can play in children's mental health outcomes (Amato; Gilbreth, 1999), this work lacked the involvement of paternal extended family. Given that most children in foster care come from non-resident father homes, research regarding paternal involvement has fallen behind. Nonetheless, recent research has found that fathers of children in foster care can play an important role in supporting their children's mental health outcomes (Leon et al., 2016). Little to no research has explored paternal relatives' support of children in foster care. It seems feasible that if maternal relatives play an important role in supporting children in foster care, then paternal relatives might as well. For this study, 204 children (six to 13 years) from Chicago's foster care system were sampled and received family-finding intervention. Family finders reported on all available relatives of kin, fictive kin, and their involvement with the child. This research aimed to expand upon the Leon et al. (2016) study to compare the frequency of maternal versus paternal kinship systems involved in raising children in foster care. Through file reviews from trained family finders, it was found that maternal kin had greater involvement in childrearing; one in two reporting positive attachment figures from the maternal family. However, a significant minority of children (1 in 4) received support via a positive attachment figure from paternal kin. Though fathers and paternal family members have historically been overlooked, the current study underlines the importance of examining social support from paternal kin. Thus, the importance of the father's family in child welfare case planning should not be overlooked, and further research should be done on the subject.

Meisner, Paul

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Naeem Seliya *Paul Meisner*

Abstract Name: Curiosity Detection in Student Text Responses

To advance a student's learning process, cultivating their curiosity can be rewarding. How can we assess curiosity in students in learning topics of a course? We present a unique question-based student text responses analysis that can help instructors better identify what drives students to be more engaged in their learning. To determine the level of inquisitiveness among students engaging in upper-level computer science courses, data is collected utilizing the Question Formation Technique (QFT). The latter collects text responses from students via a process with three phases, namely, divergent, convergent, and prioritization. Data collection involves presenting students with thought-provoking QFocus statements, prompting them to formulate their responses in form of questions. Subsequently, the data is analyzed and interpreted through Natural Language Processing for which Python-based scripts are developed toward an efficient organization of the student text responses, which is then analyzed using the WEKA machine learning tool. Feature (word token) selection is performed using several feature rankers and wrapper-based feature subset algorithms in WEKA. It was determined that the extracted features provide meaningful insight into the "Propensity for Exploration" (PE) within the student text responses as a measure of their curiosity degree levels. The PE metric was selected to represent student curiosity primarily due to the following beneficial insights it provides, namely, degree to which a question identifies characteristics of the subject on the question, degree to which the relationship between the primary subject and other course topics is identifiable, and degree of capturing how relevant the characteristics of are/or relationships between tokens in the question. Through an empirical mining of words/sentences that prove a curious disposition in text data produced by students in response to thought-provoking and critical thinking analysis, we obtained promising results, including an interesting distribution of results among the different applied feature ranker and subset algorithms.

Meje, Mohammed

Institution: ***TX - San Jacinto College***

Discipline: Mathematics

Author/Contributors:
Mohammed Meje,
Nathanial Wiggins

Abstract Name: Self-Evaluation & Validation for Mathematical Modelling

Complex systems are those which encompass their interactions between an environment, sensitive dependence on initial conditions, and emergent behavior. Modelling problems that arise in the real world with increasing complexity are difficult to manage. The gap is even wider for undergraduate students that have little to no exposure to model systems that continuously change. The reason for this is the lack of cognition to pursue and or perform such research. The main objective of this study is to boost the confidence in undergraduate students to understand complex systems through the development of a mathematical model. The rubric created in this project aims to help students self-evaluate and validate their mathematical models using a systematic approach. To augment this study, a review of Self-Efficacy, Implicit Bias, and Marzano's/Bloom's Taxonomy are necessary to highlight areas in human cognition related to the completion of a task. In addition, ABET's student outcomes and SCUDEM's rubric will be used as a reference to structure the Self-Evaluation; Validation (SEV) rubric's criteria. Ultimately, the academic weight of this work resides in the idea for students enhancing their capabilities to model complex problems through higher cognitive states.

Mejia, Angie

Institution: *MN - University of Minnesota - Rochester*

Discipline: Public Health

Author/Contributors:
Kara Nyhus,
Angie Mejia

Abstract Name: **Future Healthcare Providers' Reflections on the Impact of Reproductive and Sexual Health Knowledge and Religion During Childhood**

While there is growing interest in researching the impact of faith and religion on the sexual and reproductive health experiences of youth in higher education settings (Ahrold; Meston, 2010; Freitas, 2015; Yarhouse et al., 2018), we still do not know enough about the experiences and perspectives of religious young adults working towards a career in the medical and health sciences. Using a variety of qualitative data collection methods (interviews, ethnographic observation notes, and focus groups), we seek to answer the following questions: How do health sciences students of various faith backgrounds make sense of past experiences learning about sex and reproduction? How do religious students in the health sciences add to their sexual knowledge "toolbox" or increase their sexual know-how while in college? What might these unique experiences tell us about the range of reproductive health practices for other U.S. young people in college? Participants involved in these conversations were part of a target population that self-identified as having a current or past association with a religion or faith. In addition to presenting preliminary findings on religious students in the health sciences and their experiences learning about sexual health during adolescence as well as their continued knowledge needs, our presentation will explore and expand the methodological choices we implemented to generate participant conversation around a potentially stigmatizing topic. This aspect of the presentation will focus on the process in designing an interactive focus group with an educational component and the success in creating a space to discuss these issues.

Mejia, Ivy

Institution: *CA - California State University - Fullerton*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ivy Mejia,
Guadalupe Rodriguez ,
Adam Roberts

Abstract Name: **Deformity and Mortality in Zebrafish Larvae Exposed to Valproic Acid**

Congenital disorders are medical conditions in pregnancy leading to neurodevelopmental problems such as neural tube defects and autism spectrum disorder (ASD). Studies show in utero exposure to the anticonvulsant medication, valproic acid (VPA), has been associated with increased risk for malformations and neurodevelopmental disorders, such as ASD. Prenatal exposure to VPA may mediate dysfunction through the inhibition of histone deacetylases and antagonism of folate. Despite the potential risks of VPA exposure to the developing fetus, VPA is still commonly prescribed to pregnant women to prevent migraines, control epileptic seizures, and treat mental disorders such as bipolar disorder.Zebrafish (Danio rerio) are ideal model species to investigate the consequences of early developmental exposure to drugs, such as VPA, due to their ex utero development, small size, high fecundity, translucency, and amenability to genetic manipulation. In this study, we examined various concentrations of VPA early in the life cycle of zebrafish to assess mortality and deformation. We exposed zebrafish larvae (0-5 days post-fertilization) to VPA (0-X μM) to determine the highest VPA dosage that fails to elicit increased mortality and deformity. We found that exposure of zebrafish to VPA at levels higher than 15 μM increased mortality and deformity risk.

Mejia, Sara

Institution: *UT - Weber State University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Menglu Jiang,
Sara Mejia,
David Aguilar-Alvarez

Abstract Name: Acute Effects of Aerobic Activity Compared to Sauna Exposure on Plasma Uric Acid Concentration

Aerobic exercise provides multiple health benefits, some of these benefits are modulated by increased body temperature, vasodilation, sweating, and others. Previous studies have shown that exercising results in plasma uric acid (UA) increased concentrations. In this study, we sought to investigate if a 30-minute session of sauna-induced heat therapy has similar effects as exercising aerobically for the same amount of time on plasma UA. We hypothesize that heat therapy and exercise will increase concentrations of plasma UA.Plasma from fourteen participants (age 23 ± 2 y, ht 1.74 ± 0.08 m, wt 80.9 ± 19.7, BMI 26.5 ± 5.5 kg/m^2) was collected and tested. Each participant completed a randomized crossover, counterbalanced control study. This trial consisted of a 20-minute resting period lying supine that was followed by 30 minutes of either sauna heat therapy (SAU: ~132°F/~56°C), cycling exercise (EXER: ~40-50% HRR), or upright sitting that served as the control (CON: control). At the completion of the trial, participants completed a 60-minute recovery period lying supine. Plasma samples were taken both pre- and post-completion of each activity for research evaluation.Cycling exercise was the only treatment to increase UA concentration, EXER (pre 3.52 ± 0.16 vs post 3.67 ± 0.15; P = 0.03), SAU (pre 3.70 ± 0.17 vs post 3.73 ± 0.15; P = 0.85), CON (pre 3.90 ± 0.18 vs post 3.74 ± 0.14; P = 0.11).Cycling for 30 minutes (40-50% HRR) was enough to increase UA levels. This is in accordance with previous studies showing that exercise increases vasopressin which concentrates plasma UA; in addition exercise results in lactic acid build up that prevents plasma UA excretion.Sauna heat therapy for 30 min at ~132°F/~56°C did not affect plasma UA levels. Longer exposure or/and intensity may be required to observe noticeable changes in this marker.

Melinson, Aidan

Institution: *NC - Elon University*

Discipline: English/Linguistics

Author/Contributors:
Aidan Melinson

Abstract Name: Models and Myths: Unmaking the Bounds Between Gods and Saints

This poetry portfolio project contemplates the figure of the Catholic saint and their patronages in the context of pagan gods and spirits. Catholic saints are understood to be canonized because they are deemed good examples of Christian virtue; they are figures to be emulated as examples of leading a good Christian life. Furthermore, the saints are so important to the Church and its history because they are incredibly personal. The saints are, in essence, ancestors; they are the Christians who came before and whom Catholics ask for help because of their virtue. Unlike the saints, though, many pagan gods are not meant to be imitated; they are merely worshipped, and often, worshipped with the wary understanding that the gods are necessarily apart from us in a way that the saints are not. They may teach lessons or values, yes, but the gods themselves are not modes of living in the same way that the saints are. With this understanding, what becomes of the saint when they are not prayed to as a mentor, but as a myth? How do the saints function when their patronage is muddied, when they are seen as monarchist and imperial, as marriage and mourning, when they are liars, arsonists, demons, and gods? As someone with a strong connection to Catholic and pagan faiths, I have created this collection of poetry to wrestle with these questions. The pieces in this collection build upon each other to offer a new conception of the saints alongside the gods where neither category should be understood as strictly figures of emulation or figures of wary-worship, rather, the line between saint and god is not a rule, but merely a suggestion.

Menchavez, Jennifer

Institution: *IL - Northeastern Illinois University*

Discipline: Social Work

Author/Contributors:
Jennifer Menchavez

Abstract Name: **Investigating the #MeToo Movement: A quasi-experimental study exploring the impact on intersectionality and reporting sexual misconduct**

The rise of the #MeToo Movement, originally founded by Tarana Burke in 2006, began as a public statement on a social media platform to bring attention to the severity and frequency of sexual assault and harassment occurring in gender and racially-based communities, specifically with women of color. Although the movement began as a stride toward raising awareness for communities of color, the face of the movement shifted in mid-October 2017. Actress, Alyssa Milano, spoke out against Harvey Weinstein, a film producer, for sexually harming her and many other actresses. Milano then encouraged individuals across the internet to post #MeToo in the event that they had experienced sexual misconduct without consent, thus leading to the viral expansion of the Movement. As a result, the hashtag was retweeted approximately half a million times within 24 hours. The rise of #MeToo increased recognition of unwanted sexual experiences in individuals, while also increasing disclosures of sexual misconduct online. Despite the #MeToo Movement gaining tremendous popularity and momentum, social critiques and researchers have noted the change in representation ultimately becoming a movement for white-hetero-cis-gendered females. Although there is numerous sexual violence research with samples containing white cis-gendered hetero females, it is essential that research focus on the impact among marginalized identities by utilizing an intersectionality approach. This quasi-experimental study explores the impact of the #MeToo Movement on intersectionality using a difference in difference method by investigating the correlation of reporting sexual violence to a rape crisis center versus law enforcement among cis-gendered women, women of color, and women from the LGBTQIA+ community. The results from this analysis will provide implications for future research and training surrounding sexual violence and marginalized identities in addition to promoting changes within the way service providers, such as law enforcement, provide interventions for SV survivors.

Mendoza, Diane

Institution: *TX - Texas Woman's University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Diane Mendoza,
Stefania Vasquez,
Sarina George,
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Zane Lybrand,
Elisa Na

Abstract Name: **The effects of chronic mild stress on traumatic brain injury recovery**

Traumatic brain injury (TBI) is a debilitating condition which results from a concussive blow to the head and can produce epilepsy, mental health issues, and cognitive and behavioral impairments. The long-term impacts of TBI include brain edema, hypoxia, as well as damage to neural processes, the effects of which may compromise blood-brain barrier function and promote inflammatory responses. It is not clear if prolonged exposure to stress exacerbates symptoms associated with TBI thus the current experiment addresses the impact of chronic mild stress (CMS) on anxiety-like and depressive-like behaviors in a mouse model of TBI. The current study also assesses the combined effect of CMS and TBI on gliosis, the process through which glial cells respond to central nervous system damage. Using S100β staining, we quantified the extent of gliosis in the cortex and hippocampus of mice exposed to CMS, TBI or a combined treatment of both CMS and TBI.

Mendoza, Joshua

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Chemistry/Materials Science

Author/Contributors:
Stephen Maldonado *Dylan Vitt* *Joshua Mendoza*
Alexander Devine *Jack Liu* *Jun Kit Lim*

Abstract Name: Developing a Machine Learning Algorithm using Pattern Recognition to Analyze Experimental Data from Photoelectrochemical Systems

The purpose of this research is to develop a machine learning algorithm that will use pattern recognition to match experimental voltammograms with model responses to understand the physical parameters of an artificial photosynthetic system. Photosynthesis, the process in which plants convert light energy from the sun into chemical energy, can be replicated artificially in a photoelectrochemical reaction powered by natural light that generates hydrogen fuel at a semiconductor electrode. Semiconductors, such as silicon, are an essential part of converting light into usable energy. The potential and current recorded with semiconductor electrodes as working electrodes and separate reference; counter electrodes contain useful information about the reactions if proper analysis can be performed. Performing data analysis on the data collected from cyclic voltammetry allows the photoelectrochemical reactions to be examined in a systematic manner to determine the best conditions for conducting the reactions. Experimental variables include the type of semiconductor used to construct the electrode, the surface area of the semiconductor, and the dopant density of the semiconductor. The developed algorithm allows for more precise measurement of the system parameters that control the reaction properties. The present data were recorded in the absence of light to control the variability of the experiment. Future experiments will utilize visible light to drive the current that powers the reactions. This algorithm will aid in the understanding of the reactions taking place to move forward towards the end goal of creating hydrogen fuel solely through the use of natural light.

Menendez, Alexis

Institution: ***WI - Carthage College***

Discipline: Biology

Author/Contributors:
Alexis Menendez,
Abigail Groszek,
Angela Dassow

Abstract Name: Passive Acoustic Monitoring of Cao-Vit Gibbons (Nomascus nasutus) Utilizing Multilaterations of Vocalizations

Since their rediscovery in 2002, the cao-vit gibbon population has remained critically endangered and thus, a limited amount of information regarding their vocalization and general behaviors has been discovered. The use of Passive Acoustic Monitoring has been utilized as a non-invasive method to monitor individuals and wildlife populations alike. In this study, twenty GPS-synced audio recording units were deployed in a limestone karst rainforest in Northern Vietnam. The goal of the deployment was to determine the feasibility of finding precise locations of these individuals. Approximately 3,000 hours of audio data was collected and manually marked to locate times in which male or female calls were received at the units. The results of the multilateration analysis successfully generated a map showing the locations that different groups of cao-vit gibbons were calling. Future goals that have arisen from this research include gathering data for long-term research on gibbon communication, intraspecific behavioral interactions, as well as the potential development of technologically based solutions for applied conservation.

Merbach, Karlyn

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Business

Author/Contributors:
Karlyn Merbach *Inigo Martinez* *Gaurav Bansal*
Zhuoli Axelton

Abstract Name: Does the CIO's Gender matter more than her Expertise and Leadership Style in affecting IT security policy compliance?

Information security threats have become a major concern for organizational leadership. Research suggests that IT leadership is vital in influencing employees' IT security compliance with security policy; however, there is little research measuring the role of the CIO's gender in influencing employees toward IT security compliance. The IT field has progressed, and there are more women CIOs now, but women leaders are still a minority in IT. According to a Pew Research report published in 2018, societal role expectations and barriers have discouraged women from going into the IT domain. Barriers to learning and advancing in IT careers have also hampered women's self-confidence to pursue careers in this industry. Thus, perceived credibility or IT expertise becomes another serious challenge women IT leaders face.While it is known that women leaders are more transformational than transactional, men, in contrast, are known to follow a transactional leadership style in general. Prior studies provide overwhelming evidence that the transformational leadership style is more effective in influencing behavior change and positively related to team and organization performance.Thus, this paper seeks to understand the role of CIO gender, perceived IT expertise, and leadership style in influencing employees' behavior change and intention to comply with cyber-security recommendations. The 2x2x2 controlled experiment uses various vignettes in Qualtrics to manipulate gender, IT expertise (low/ high), and leadership style (transactional/ transformational). Data will be collected from all over the US using MTurk during December 2022 and analyzed during January 2023. The findings of the study will have theoretical and practical implications. It will help inform IT literature on the role of the security message sender's characteristics and the contextual outcomes; on the other hand, they will guide CIOs, particularly women, on how they can tailor their leadership style and security recommendations to achieve greater behavior change.

Mercer, Aspen

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

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Alyssa Bierman,
Jacob Grabinski,
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Jackson Turk

Abstract Name: Social Media and Self-esteem

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negativeinformation that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development.The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Merkel, Micah

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

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Bryce Knutson

Abstract Name: **Effects of Social Media**

Social media has become one of the biggest aspects of our everyday lives. They allow us to share our lives with loved ones, research our interests, and expose ourselves to all kinds of new things. Due to how ubiquitous the sites are, they inevitably will have a profound effect on mental health. Existing literature shows that there are many ways that social media can affect people's lives. It shows that social media can affect people's health choices and personal lifestyle decisions. Research also shows that people tend to compare themselves to others more when using social media often, which can lead to a multitude of mental health and self-perception issues. This research focuses on mental health and social media use. Using a survey implemented to a diverse sample of individuals through various social media outlets, a wide variety of different trends emerged. The main focus of the research was to determine whether social media was linked to self-esteem. The research shows a wide variety of ways social media is affecting people's mental health and their assessments of their own physical and intellectual attributes.

Merlino, Kaitlin

Institution: *PA - Messiah University*

Discipline: English/Linguistics

Author/Contributors:
Kaitlin Merlino

Abstract Name: **Handbooks, Policies, and Power: Discursive Language and LGBTQIA+ Representation in Christian University Handbooks**

For many years, tensions have existed between the Christianity and LGBTQ communities, most apparent in contexts such as politics and education. One site of conflict lies within the realm of Christian higher education, specifically in regards to campus-wide regulation of same-sex behaviors. Though some such schools file exemptions from the Title IX that prohibits sex-based discrimination, others draft language that flies under the radar. This research examines the language surrounding rules for LGBTQ students and their rationale as communicated in five Christian universities' handbooks. Bakhtin; Holquist (1981) demonstrate the innate tension between dialogue and the social context within which it is understood. Therefore, since language is not neutral, the words creating these rules are in themselves a site of tension for the university, its contributors, its students, and the greater society. Additionally, Derrida's (1973) idea of differance creates another dimension when it comes to discourses – we know what something is through knowing its negative. This tension and use of the negative suggest also a power dynamic in place through language. McKerrow (1989) and Foucault (1982) provide the framework for uncovering these dynamics. Using critical theory with a focus on Bakhtin's perspective on dialogue, this paper will work to show the organizational and dialectical tensions that these rules create. I demonstrate ways in which Christian university mission statements and same-sex rules in student handbooks represent dialectical tensions for Christian universities to engage in order to best serve LGBTQ students.

Mersy, Nathaniel

Institution: *MN - St. Olaf College*

Discipline: **Mathematics**

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Anja Logan,
Nathaniel Mersy,
Taylor Smith,
Joash Daniel

Abstract Name: **Quantifying organic phases in coral skeletons at the nanoscale**

Nanoscale mineral structures of coral are not well understood. When corals build their skeletons, they are composed of nanoscale crystalline structures. It is known that coral skeletons are affected by ocean acidification and climate change at the macroscale. However, understanding how the coral skeleton-building process functions at the nanoscale would allow for better modeling and prediction of how coral might fare under varying ocean conditions and climate changes. Specific isotopes in coral skeletons can mark the organic or mineral parts of the skeletons, and thus can be used as indicators of different phases in the coral skeletons. Our goal is to statistically investigate quantitative relationships that exist between different organic and mineral associated isotopes in coral skeletons. Multiple corals were lab-grown under various controlled conditions at St. Olaf College, and they were analyzed at the nanoscale by a mass spectrometer to extract concentration data for specific isotopes present throughout the skeletons. We use Pearson correlation to measure the strength of the relationship across coral isotopes and Mander's coefficient to measure co-occurrence. Co-ocurrence looks at the high concentration clusters of isotopes across isotope pairs. Knowing the quantitative co-occurrence of isotope pairs in the coral skeletons helps in understanding the spatial distribution of organic molecules within the coral skeleton, which in turn can help us better understand the growth process of the coral skeleton itself.

Mesa, Giuliana

Institution: *FL - Miami Dade College*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Laurent Cabezas,
Giuliana Mesa

Abstract Name: **Undershot Waterwheel Energy Optimization**

A waterwheel is a device that is used to take advantage of the energy produced by flowing water. In locations where the water flows horizontally, referred to as low-head conditions, an "undershot waterwheel" is employed. The head of a location is by definition the height difference between the point in which the water enters the system, and the point at which the water leaves the system. Taking into consideration the value for the head (v22G) of the location, the optimal overall diameter (3 to 6 times the head) of the wheel can be determined. We can take advantage of the low speed caused by the low- head conditions by designing a wheel with an optimal number of blades. The rationale for this lies in the fact that a higher number of blades would increase the torque, and consequently, the kinetic energy. The optimal number of blades is determined by the ratio between the working circumference and the head, where the working circumference is the difference of the overall diameter and the head multiplied by . This project aims to evaluate the effect that: 1. The number of blades, 2. The thickness and 3. The flow of water, will have on the energy production of the system. We will test each alternative design for the system individually, as well as collectively.

Meunier, Kya

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
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Kya Meunier *Chase Fillion* *Chris Connoy*
Molly Halverson *Lydia Przytulski*

Abstract Name: **Spider functional community assembly along a stress gradient in Northern and Southern Wisconsin forests**

Ecological communities are smaller subsets of overall larger species pools.Ecological selection can cause a community to have less than expected functional trait diversity, narrowing it to a small subset of features (trait clustering). There are also processes, such as competition, that can cause communities to have greater than expected trait diversity (trait overdispersion), especially where ecological stress is low (i.e., the stress-dominance hypothesis). Ecological selection can also alter the mean trait values of communities.There has been considerable work on the functional assembly of plants and fish, but little is known about assembly of terrestrial invertebrate animals. We placed three pitfall traps in 40 locations in Northern forests (i.e., mainly evergreen conifers) and Southern forests (i.e., mainly deciduous trees) across a strong gradient in soil moisture. We measured the size and asymmetry of spider body, leg, eye, and mouthpart traits because they are related to resource acquisition.We used Monte Carlo simulations to estimate the amount of functional trait diversity and mean trait values that would be found if community assembly was caused by random ecological drift. The simulations used three species pool scales: regional (all species), within Northern or Southern Wisconsin forests, within specific forest types. Overall, trait diversity was less than expected by chance, but the effect size was smaller when using smaller species pools.Spiders were larger in Southern forests, but mean trait values were unrelated to soil moisture.Size trait diversity increased with moisture in Northern forests, but not in Southern forests.This partially supports the stress-dominance hypothesis.Asymmetry trait diversity was also unrelated to moisture.Functional community assembly differed in Northern versus Southern forests, and so there are unique assembly rules for each region.

Mexquititla, Ayleen

Institution: *PA - Moravian University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ayleen Mexquititla

Abstract Name: **Examining the impact of abiotic and biotic factors on early establishment of Morella cerifera**

Shrub encroachment is occurring on Virginia barrier islands in part because of the expansion of native shrub, Morella cerifera. Previous studies on Hog Island, Virginia, show that M. cerifera is protected behind elevated dunes where grass cover is variable. Grass cover plays a role in successful establishment into grasslands; however, when grass density is too high M. cerifera establishment is impeded. What is unknown is the level of grass cover that is beneficial for M. cerifera establishment. The hypothesis is that low grass density (≤70% cover) will change the surrounding microenvironment and increase the establishment of M. cerifera seedlings. The current research is important to understand the role of grass cover on the successful encroachment of M. cerifera on barrier islands. To address the impact of grass density on M. cerifera seedling establishment ten 3m x 3m observational plots were set up to document the natural establishment of M. cerifera seedlings. Five plots were high grass density plots (95-99% grass cover) and five plots were low density grass plots (40-70% grass cover). Within these observational plots the abiotic environment was also characterized specifically, seedling number, temperature, chlorides, species richness, and light availability. Experimental plots (1m x1m) were set up adjacent to each of the observational plots. Five seedlings were transplanted per 1m x 1m plot for a total of 50 seedlings. At the end of four weeks seedling survival was quantified. Results show that there were no naturally occurring M. cerifera seedings in the high density observational plots; however, after four weeks there was 88% survival in high density plots compared to 80% survival from the low density plots during the summer. Grass cover may be more important for the survival of M. cerifera seedlings during the summer months.

Meyer, Natalie

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Biology

Author/Contributors:
Natalie Meyer,
Nicholas Winter,
Abby Lentz

Abstract Name: Bumblebee Distribution on UW-Parkside's Campus

Purpose: Bumblebees are known pollinators and contributors to healthy ecosystems. In Wisconsin, UW-Parkside is a known location for the federally endangered Rusty-patched-bumblebee (Bombus affinis) and other bumblebee species. The objective of this project was to locate and identify various members of Bombus in four distinct campus phases (phase 1 and 2: completed restoration, phase 3: current restoration, phase 4: pre-restoration). Artificial nests were deployed into phases to encourage nesting and assess feasibility of monitoring resident bumblebee populations. Methods and Materials Weekly, one-hour, surveys were conducted under appropriate conditions from 11 May to 5 October, 2022. Sites of ~15m radius within each phase were surveyed for Bombus activity. Information regarding location, weather, and topography were recorded. During surveys, specimens were tallied and photographed for later identification. In each phase, six randomly placed artificial nests were either wood-covered or unsheltered to resemble natural nesting conditions. Early in the season nests were regularly inspected for activity.ResultsDuring 50 surveys, 199 bumblebees were recorded on the UW-Parkside campus; no Rusty patched bumblebees were observed during the first year of this project. Bumblebees appeared to prefer phases based on habitat composition rather than levels of restoration. In spring, it appeared queens frequented wooded areas, presumably for nesting purposes. Artificial nests were unoccupied this season perhaps due to delayed placement and challenges from vegetation encroachment. This pilot project provides guidelines for future artificial nesting placement and construction. Overall, our first season of survey data provides needed information on the current state of bumblebee activity on campus which serves as a guide for further restoration.

Meyers, Rachel

Institution: ***TX - San Jacinto College***

Discipline: Physics/Astronomy

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Madhu Gyawali,
Mallika Gyawali

Abstract Name: Decadal Variations of Six Criteria Air Pollutants Over Texas

The Clean Air Act requires the US Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as “criteria air pollutants”). These six pollutants are carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter, and sulfur oxides. These pollutants are found all over the U.S. They can harm health and the environment and cause property damage. The EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standard in accordance to the Clean Air Act. States must develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to achieve the criteria for each area designated nonattainment for a NAAQS. This study presents in-situ surface measurements from the Air Quality System (AQS) EPA for six air pollutants from 2005 to 2022, as well as the weekly, monthly, and yearly trends for these pollutants over Texas’ major population centers. This study will analyze these trends for any correlation with petrochemical industry, vehicle usage, technological advancement, and natural events. Although the overall trend is that of a decrease in the concentration of these pollutants over time, it is worthwhile to explore more granular trends in an effort to identify their underlying causes.

Mia, Maharun

Institution: *VA - George Mason University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Maharun Mia,
Adam Winsler

Abstract Name: **Intersectional Effects of Race and Gender on Age of Special Education Service Receipt for Autistic Children**

Early diagnosis of autism spectrum disorder (ASD) is important for providing early intervention to improve later developmental outcomes. Race and gender are associated with differential age of diagnosis (AOD) for children with ASD. Females often have a later AOD than males, but there are conflicting results in previous studies regarding the effect of race on AOD, and a lack of studies generally focused on intersectional effects ofrace and gender. Using existing data from the Miami School Readiness Project (MSRP), in which over 40,000 ethnically diverse children were followed from pre-K through 12th grade, I will examine intersectionality effects in the grade at which a subsample of MSRP children with autism (n = 2,000) first received ASD as their primary exceptionality in the public school system for special education services. Multiple regression analyses (in SPSS) will be performed to determine the relationship between race and gender (and their interaction) in predicting the grade at which students first received their autism exceptionality (0 = K, 1=1st grade, 2=2nd grade. Etc. through 12th grade), controlling for poverty status, DLL status, and child behavioral and cognitive functioning directly assessed at age four. Questions include: 1) Is the grade of special education receipt for ASD similar between males and females, and for White, Black, Asian, and Latino children? and 2) Are there intersectional effects between race and gender on the age of special education service receipt? Data are currently being cleaned/prepared and preliminary exploratory data analyses are being done to look for distributional shape and outliers in the variables. Analyses/results will easily be complete in time for the conference. Results will have important implications for school systems in how they provide special education service for diverse groups of students with ASD.

Micech, Brandon

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Business**

Author/Contributors:
Brandon Micech

Abstract Name: **Security Selection Model for the Gordon Spellman Fund Phase 2**

In 2005, a student-directed portfolio was created at the University of Wisconsin-La Crosse where an alumnus, Kevin Spellman, donated funds in his grandfather's name. Since 2005, the fund has approximately $383,500 in value and is invested in common stock and cash. The fund is managed by the investment club and students in Investment Analysis and Portfolio Management (FIN 475), with finance faculty and Spellman Fund advisors (investment professionals) providing oversight. The fund follows a value-investment strategy but has yet to establish a formal method to analyze potential investments. This research will test the performance of my stock selection model focused on twelve financial measures and assess how well it can explain future returns on 3,915 stocks. The analysis will also examine each stock's composite score rating from 0-100 based on how correlated each financial measure is with future returns and will determine average returns over time based on specific percentiles. Refining the model will allow future students to select superior stocks to analyze and potentially add to the Spellman Fund based on the investment criteria. I have applied for this analysis to be part of the poster presentation given atthe National Conference on Undergraduate Research.

Michels, William

Institution: *MA - Worcester Polytechnic Institute*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Foote,
Gabriel Brown,
Nishan Grandhi,
William Michels

Abstract Name: **Assessing Lupine as an Environmental Conservation Tool in Iceland**

Iceland's environment is highly prone to erosion and has conditions that make plant growth challenging. The plant lupine is a divisive solution to soil erosion and reforestation that has been found successful in some regions of Iceland but not all. We researched the issue through extensive document research, expert interviews from different perspectives, and surveys of native Icelanders, to get as complete and unbiased a picture of the issue as possible. We used this to create a decision guide that gives a comprehensive account any person in Iceland can use in order to choose what they would like to do to address soil conservation and reforestation issues on their land. Key issues the decision guide covers are soil conservation, reforestation, and removal of lupine. Along with the decision guide, we include a decisional balance sheet to show the pros and cons of lupine usage in Iceland and a plant infographic to teach about the plants in the decision guide. These tools can be used by land owners in Iceland to make decisions about restoration and reforestation on their land.

Mickelson, Christina

Institution: *OH - Capital University*

Discipline: Biology

Author/Contributors:
Jia Campbell,
Nathan Gibbs,
Christina Mickelson,
Katherine Freeland

Abstract Name: **Assessment of At-Home Genetic Testing Kit Consistency Between Identical Twins**

Since their arrival on the market in the early 2000s, direct to consumer (DTC) genetic testing kits (at-home kits) have exploded in popularity. As the industry has continued to grow, questions have emerged over the accuracy and consistency of the results of these ancestry reports. Despite claims by all companies studied here of over 99% accuracy, previous research in this lab has shown significant inconsistencies between the results provided by each company. Of 42 individuals previously tested, 39 had large discrepancies in their genetic ancestry categories from company to company; results varied by up to 40% for some participants. The goal of the current study was to examine the DNA of identical twins to determine if these testing discrepancies exist within companies (since the DNA of identical twins should be the same) or only between them. The same three genetic testing companies that were previously studied were used here - Ancestry, 23&Me, and MyHeritage. To date, five sets of identical twins have received full results, and several additional sets of twins are in process. Results have remained consistent with the previous study, with discrepancies between ancestry categories reported by each company. Surprisingly, in addition to the discrepancies between companies, differences were found between twins in data reported by the same company. No set of twins had results that completely matched. In some twins, one individual was noted to have an ancestry category that the other didn't have at all. Given the claims of near-perfect accuracy reported by the companies, and the fact that some of them also market genetic health screenings for certain diseases and health conditions, these inconsistencies raise serious ethical concerns about the way on which they market and report data to under-informed consumers.

Midthun, Zoe

Institution: *CA - Mills College at Northeastern University*

Discipline: **Biology**

Author/Contributors:
Jennifer E. Smith *Erin Person* *Zoe Midthun*

Abstract Name: **Social network connections reflect gut microbiome of California ground squirrels**

The gut microbiome, defined as the microbial ecosystem in the digestive tract, has wide-ranging effects on animal health, but its social correlates are poorly understood in wild mammals. The microbiome is likely impacted by many factors such as social behaviors. Horizontal transmission is expected during social interactions among individuals within a lifetime. This research focused on a highly tractable social mammalian species, the California ground squirrels (Otospermophilus beecheyi), as part of a long-term study at Briones Regional Park. We sequenced bacterial 16s rRNA from fecal DNA from these free-living mammals. First, we report on the results of a validation study in which we assessed the effects of sample collection and storage methods on fecal bacterial diversity in field conditions. We collected fecal samples from twelve adult female squirrels either from the soil beneath traps in which individuals had been captured or from tubs placed under squirrels during handling. Samples were then either frozen immediately in liquid nitrogen or stored on ice for several hours before being transferred to a -80oC freezer. We found no differences among methods with regard to sequence read depth or alpha (within individual) diversity of bacteria, confirming the validity of this measure. Second, we examined the social networks of marked individuals over time to evaluate the relationship between social network connectivity and fecal bacterial diversity. We predicted a positive relationship between the node degree (average number of squirrels interacted with in a day across the entire summer) in social networks and fecal microbial diversity. We performed social network analyses to assess the effects of social connectivity on an individual's microbiome diversity and composition. We found a correlation between the bacterial diversity of the gut microbiome and the node degree of the squirrel, suggesting that increased social interactions are having a positive effect on microbiome diversity.

Miller, Ailee

Institution: *WI - University of Wisconsin-Superior*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Ailee Miller,
Shanna Nifoussi

Abstract Name: **Stress & Risk: The Effect of Online vs. In-Person Stress**

Stress research is imperative due to the health consequences associated with stress, and with the switch to online formats, telehealth appointments have become commonplace. The study here aims to identify if stress research could be conducted online, and to determine if there is an effect of risk-aversion on the level of stress response. It was hypothesized that there would be a similar stress response in both the online and in-person groups, and that those who are risk-averse would have a higher stress-response. Participants were recruited from UW-Superior and split into online and in-person groups. Everyone completed a pre-meeting survey to gather baseline heart rates and fill out a risk-aversion survey. Both groups were tested on memory and heart rates. At a second meeting, the participants were exposed to a social stressor in between tests and completed a lottery activity to gauge risk-aversion. It was found that there were similar stress responses based on heart rate among the online and in-person groups, and the lottery activity produced similar results to the survey. This provides promising results to indicate that the same stress response is elicited in both contexts, however, a larger group will need to be tested in order to gain significant results.

Miller, Amury

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Liz Cobain,
Amury Miller,
Ruth Vang

Abstract Name: Minority Status and Mental Health B

Discriminatory behaviors live througout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress experienced by people with minority status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to chronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of the majority stauts. This study will identify factors associated with positive and negative mental health development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Miller, Ashley

Institution: ***TX - The University of Texas at Arlington***

Discipline: Art/Music History

Author/Contributors:
Ashley Miller

Abstract Name: The Development of the Y?kai Fox in Print and Literature

The earliest records of these supernatural creatures are from official documents in the third century C.E. China, but they can be fund all over the region in folktales, literature, and prints. One of the most prolific varieties was the Yokai, a manifestation of supernatural creatures in Japanese society. They played a promient role in Edo Period Japan and were so impactful that thye persist in contemporary media. The role these creatures had in society has evolved, yet these supernatural beings remain an integral part of the culture of East Asia. This presentation will look at four examples of the yokai fox in prints that support not jsut their cultural importance, but how their roles and powers have been adapted across time and culture since their inception.

Miller, Mackenzie

Institution: *PA - Duquesne University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Mackenzie Miller *Pamela Marshall* *Lyndsie Ferrara,* *John Cencich*

Abstract Name: 73 Hours: The Making of a Domestic Terrorist

On April 19 of 1995, the Alfred P. Murrah building was bombed using a deadly cocktail of fertilizer, diesel, and other chemicals. Timothy McVeigh, a Gulf War veteran, was the mastermind behind this explosion. After the incident on Mount Carmel in Waco, McVeigh became enraged with the U.S. government. That act combined with the fear that McVeigh may lose his right to bear arms led him to plot revenge against them.This research aims to analyze both the childhood and young adulthood of Timothy McVeigh to determine if he exhibited psychopathic behaviors using an indirect personality assessment and a series of interview tapes. The assessment will consider various factors which will all be used to conclude behaviors, if any, reflecting psychopathy. The factors include the family details of McVeigh's family such as their dynamic and environmental conditions during his childhood. The assessment also focuses on the physical characteristics, health, employment, personal relationships, and hobbies/passions. The most important factor is the behavior of the individual under assessment. The details of McVeigh's behavior are discussed in the biography American Terrorist: Timothy McVeigh and the Oklahoma City Bombing by Dan Herbeck and Lou Michel. The biography discusses thoughts and feelings of McVeigh throughout his life: childhood up to before and after the bombing. Interview tapes were conducted and recorded by the two authors of the biography. The interview tapes will be utilized to listen for emotional inflection in the voice. Emotion such as excitement which can be indicated by the increased speech or the change in tone. The factors mentioned above will be used to come to the conclusion of whether Timothy McVeigh is a psychopath according to societal standards. This research hopes to validate an indirect personality assessment and compile a list of precautionary questions to assess other individuals in the future.

Miller, Megan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Jyl Kelley

Abstract Name: Enhancing Instruction With Video Tutorial In The Arts

The goal of this project is to evaluate students' percieved effectiveness of instructional video tutorials in a photography class. The instructional video tutorials will be used to supplement the traditional teaching methods in the course. The research question is: Are instructional video tutorials perceived as effective by students in a photography course? The project will be assessed by student surveys that ask students to reflect on the aspects of the instructional video tutorials the are helpful or not. The student researchers for this project will help research best methods of creating instructional videos, organize content, capture and edit the tutorial videos for the course.

Miller, Mikaela J.

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Psychology/Neuroscience

Author/Contributors:
Isabelle G. Wilson *Mikaela J. Miller* *Sara K. Pardej*
Bonita P. Klein-Tasman

Abstract Name: **Performance on Executive Functioning and Attention Measures in Children with Neurofibromatosis Type 1 Compared to Unaffected Controls**

Neurofibromatosis type 1 (NF1) is a neurogenetic condition caused by a pathogenic variant of the NF1 gene. Cognitive problems in executive functioning and attention are prevalent in children with NF1. Executive function is an umbrella term for the cognitive processes that drive goal-directed and self-regulatory behavior. Executive function deficits in NF1 have been identified in the domains of inhibition, working memory, planning, and organization. Attention is the ability to focus one's cognitive resources on a relevant stimulus while ignoring irrelevant stimuli. In NF1, attentional difficulties have been identified in the areas of sustained, selective, divided, and switching attention. This project will examine measures of attention and executive function in children ages 7-11 years with NF1 compared to an age-matched unaffected group. Attention and executive functioning will be assessed using behavioral measures and caregiver rating scales. The Conners Continuous Performance Test-Third Edition (CPT-3) is a computer software-based neuropsychological assessment that yields information about four dimensions of attention: inattentiveness, impulsivity, sustained attention, and vigilance. Dependent measures include: omission errors (missed responses), commission errors (incorrect responses), and variability (speed consistency). The NEPSY-2 Auditory Attention and Response Set subtest (AARS) is an instrument used to assess auditory attention and impulsivity. Dependent measures include: omission errors, commission errors, and inhibitory errors (responses which indicate impulsivity or deficits in shifting). The Behavior Rating Inventory of Executive Function-Second Edition (BRIEF-2), a caregiver rating scale, assesses executive function and self-regulatory behavior. Dependent measures include ratings on scales assessing: behavior regulation, emotion regulation, and cognitive regulation indexes. We will characterize the performance of the NF1 group using descriptive statistics and compare the performances of children with NF1 and unaffected children using independent samples t-tests. We expect the NF1 group will show difficulty in comparison to normative data and to the unaffected group across all dependent measures.

Miller, Olivia

Institution: *IA - Iowa State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Olivia Miller

Abstract Name: **Diet Preferences of the Two Native Crayfish Species of Northwest Iowa, Faxonius immunis and Faxonius virilis**

Only two native species of crayfish, the pond-dwelling F. immunis and stream-dwelling F. virilis, are native to Northwest Iowa. These species live in ecologically isolated habitats and inhabit a diverse range of water resources in the area. The two species occupy distinct niches that can, on occasion, overlap. Due to their generalized diets and diverse environments, there have been many conflicting reports in the scientific literature of which method and bait are preferred to capture these two species. This study tests the most frequently reported crayfish-catching approaches and refines them into the best method for capturing the highest number of these two species of crayfish. Silver, cylindrical, wire mesh crayfish traps were used at 43°24'39.1"N 95°14'59.9"W and at 43°26'14.4"N 95°21'55.6"W. Each trap was set out in shallow water and allowed to sit for a 24-hour period before checking and replenishing the bait. Each type of bait was set out in the traps for two periods with a check in between. At each check, the crayfish present were counted, and bait was replenished. After two periods, the bait was discarded and replaced with the new bait for the next 2 periods. During the three-week collecting period in July and August of 2022, a total of 31 crayfish specimens, including F. immunis (21) and F. virilis (10) were captured. A Welch two-sample t-test at the 95% confidence level indicated that there was a statistically significant difference between the number of individuals of each crayfish species caught using 3 types of bait. This study is the starting point in refining the exact methods needed to catch the highest number of individuals of various crayfish species used in scientific studies. This could create a standardized procedure for catching crayfish across all of invertebrate and aquatic ecology, potentially reducing costs on limited grant budgets.

Miller, Raina

Institution: *OK - Southern Nazarene University*

Discipline: **Biology**

Author/Contributors:
Raina Miller,
Caio Franca,
Emma Dilbeck,
Vicente Rios

Abstract Name: **Mosquito communities and West Nile virus detection in central Oklahoma**

Understanding mosquito communities is a crucial approach to mitigating public health risks. In this study, we characterized the mosquito community in the greater Oklahoma City area and used molecular assays to detect West Nile Virus (WNV) between May and June 2022. We sampled at 19 locations with varying landscape characteristics across four counties in central Oklahoma using host-seeking and gravid traps to capture the community diversity. In total, 5,589 mosquitoes were caught comprising 27 species representing 7 genera with the majority of the specimens belonging to the Culex genus and Culex pipiens (n= 3100) as the dominant species collected. We found a correlation between the phenology of mosquito genera with clusters of similarity amongst landscapes based on ANOSIM analysis (p=0.049) with suburban areas clustered together as well as rural areas. The mosquito phenology in the early mosquito season was mostly represented by the Aedes genera, with Aedes vexans being the most abundant specimens in our traps but subsequently surpassed by culicine mosquitoes, particularly, the Culex pipiens/quadrimaculatus complex. Female mosquitoes of the same species were pooled (5 ≤ n ≤ 30) and purified RNA used for WNV RT-qPCR screening; five out of the 248 pools were positive. Three of the positive pools were Culex pipiens with the other two pools composed of Aedes vexans and Aedes albopictus, respectively. Altogether, mosquito assemblage varied across locations; Culex complex peaked towards the end of the early season, coinciding with WNV detection, suggesting Culex pipiens major role as vectors of WNV in central Oklahoma. Knowledge of changes in mosquito communities and arboviral detection can inform vector-borne disease control.

Miller, Thomas

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Thomas Miller,
Elif Ikizer

Abstract Name: **Exploring the Mediating Role of Social Dominance Orientation in Stigmatizing Attitudes Exhibited in Sports Fans**

While previous studies on sports fan environments reveal correlations between high sports fan identification and endorsement of sexist attitudes, the effect of sports fan identification on negative attitudes towards issues related to gender and sexuality outside of fan environments have not yet been investigated. In this study, we aim to examine the link between levels of sports fan identification and negative attitudes towards women, homosexual individuals, and transgender individuals. We predict that higher levels of sports fan identification will correlate with more negative attitudes toward women, homosexual individuals, and transgender individuals as compared to those with lower levels of sports fan identification. With level of sports fan identification as the predictor variable and stigmatizing attitudes as the outcome variables, correlational analyses will be performed to assess relationship between sports fan identification and attitudes toward women, homosexual individuals, and transgender individuals. The predictor variable will be measured using a composite score obtained from two measures evaluating sports fan identification, and the outcome variables will be obtained from three measures each separately designed to measure sexism, homophobia, and transphobia, respectively. Consistent with our hypotheses, we expect to find correlations between levels of sports fan identification and the specific attitude measures. Additionally, we will investigate political orientation and social dominance orientation as possible mechanisms underlying the connection between sports fan identification and attitudes towards women, homosexual individuals, and transgender individuals. These mechanisms will be investigated via mediation analyses; for example, we will explore whether the link between sports fan identification and attitudes toward women is mediated by social dominance orientation.<p class="MsoNormal">This study is currently in progress and has received IRB approval. Data collection is scheduled to begin January 23, 2023 and conclude March 1, 2023. We anticipate all data analyses and report writing will be completed prior to the conference.

Miller, Timothy

Institution: *UT - Utah State University*

Discipline: Biology

Author/Contributors:
Timothy Miller

Abstract Name: **Examining different cultural and chemical options for control of Fusarium bulb rot in onions**

Onions are grown in 1,600 acres in northern Utah and are a large part of growers' income. In the fall of 2021, 30% of a grower's onion yield was affected by Fusarium bulb rot (caused by a fungus known as Fusarium proliferatum) and the onions were unmarketable. The literature surrounding this pathogen is sparse and losses of this magnitude could cause growers to lose between six and seven thousand dollars per acre. Samples of the fungus were plated onto potato dextrose agar at half strength and maintained fresh throughout the winter. In vitro experiments were performed with various fungicides at different rates to determine which would most effectively inhibit the growth of F. proliferatum. The study also performed inoculation tests with onions in a greenhouse to discover proper inoculation methods for a field trial. The field trial was conducted to examine the effects of fungicides and different cultural practices in conditions similar to the growers of northern Utah. The field trial was the culmination of the entire study and it showed that two different treatments had a lower incidence of Fusarium bulb rot. This project was a big first step in filling in gaps on the literature surrounding F. proliferatum. These results will help refine future research when testing cultural and chemical treatments.

Millet, Mallory

Institution: *OH - Miami University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Mallory Millet,
Rose Marie Ward,
Akanksha Das

Abstract Name: **The impact of belonging to minority-based organizations on minority stress experiences in college**

Among colleges nationwide, minoritized students face additional unique stressors due to their identities being devalued in the broader climate. Further, students holding minoritized identities (vs. those do not) report higher levels of mental health concerns. Institutions of higher education often provide a range of resources to students to help assist them in their individual growth. One such source is minority-based student organizations, wherein students holding similar minoritized identities can be in community and share in similar experiences and values. Extent work suggests minority-based organizations may buffer against minority stress, specifically through increased sense of belonging. However, more research is needed to confirm this. As such, the purpose of this study is to determine whether level of involvement in a minority-based organizations reduces the experience of minority stress (both perceived and physiological), and whether that change can be explained by a higher sense of belonging. Data collection is ongoing as a midsized midwestern university. It is anticipated that minoritized students belonging to minority based organizations will report lower levels of mental concerns compared to minoritized students who do not belong to these organizations. Implications will be discussed.

Milner, Linnea

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Linnea Milner *Lauren Loock*

Abstract Name: **Mindfulness and Memory**

Purpose: Mindfulness may improve memory through promoting awareness of, attention to, and openness to information presented. The positive effects of mindfulness on memory may be seen even after brief, one-time interventions. However, mindfulness may only affect memory performance if the intervention is administered directly before retrieval rather than at encoding. Additionally, mindfulness might selectively affect some types of memory tasks and not others.Procedure: Participants will be randomly assigned to a mindfulness condition (a ten-minute mindfulness meditation) or a control condition (a ten-minute podcast about the history of mindfulness). All participants will study a list of words, either presented individually or as word pairs, and asked to memorize them for a later memory test. Participants will then take a memory test,item recognition for those who studied individual words or associative recognition for those who studied pairs. Some participants will listen to the podcast (mindfulness or control) before encoding the study list while others will listen to the podcast before retrieving the words at testing.Expected results: We will compare memory recognition performance, specifically false alarms, of participants in the mindfulness condition to those in the control condition. We expect that mindfulness should reduce false alarms only if the intervention is given directly before retrieval. However, we might find that mindfulness facilitates familiarity as a cue when making memory judgments. We expect larger differences in false alarms between the mindfulness and control groups for the item recognition task compared to the associative recognition task.Data collection is currently underway.Conclusions: Advancing or amending theories of mindfulness and memory could improve our understanding of human memory and also aid potential translations of research findings to practical applications. For example, would a brief mindfulness intervention presented before administering a classroom exam improve student performance?

Minaya, Kiandry

Institution: *NJ - The College of New Jersey*

Discipline: Biology

Author/Contributors:
Lucatmuelle L Joseph,
Kiandry Minaya,
Donald Lovett

Abstract Name: **Change in Gene Expression in Green Crabs in Response to Environmental Salinity Change**

When exposed to low salinities, the green crab Carcinus maenas experiences elevated hemolymph levels of methyl farnesoate (MF), a putative hormone that may be involved incrab osmoregulation. The final step of the MF biosynthetic pathway is catalyzed by the enzyme farnesoic acid o-methyltransferase (FAOMeT). Previous work in our lab has identified a long isoform and a short isoform of FAOMeT in the green crab; the cDNA sequences of the two isoforms wereidentical, except that the short isoform had a 15 bp deletion.Sequencing of genomic DNA determined that there were no introns present in the area of the 15 bp deletion, which suggestedthat the presence of two isoforms of FAOMeT was due to gene duplication rather to than alternate splicing. In a time-course study of crabs that had been transferred to low salinity (10 ppt), the relative amount of mRNA for the short form increased after several hours of exposure to low salinity, whereas the relative amount of mRNA for the long form did not increase significantly until the crab hadacclimated to low salinity (21 days after transfer).

Minder, Grace

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Sociology**

Author/Contributors:
Grace Minder

Abstract Name: **Accessible Learning for College Students**

For most individuals, college proves difficult in some capacity. However, students with learning disabilities face additional challenges. Disability services are a resource that many colleges offer on their campuses, but how accessible are they and are these services operating in a way that truly benefits college students? In this study, I seek to answer that research question by examining the experiences of students at a large regional university. Specifically, I aim to better understand what struggles and barriers students face when learning and how they feel about their campus's learning support. To answer my research questions, I use data from a survey of college students (n=130) and qualitative data from 8 interviews whose participants are also college students. Quantitative and qualitative data analysis show that students need better support from their professors, which could be implemented by first supporting students with better access to learning accommodations. Additionally, my analysis shows that there is a strong, negative correlation between students that feel like they may have a learning disability and a feeling of being unsupported by their professors. I also find that students that feel they may have a learning disability (but have not been diagnosed) are more likely to feel that school is hard for them. Through my interviews, I noticed a pattern that students lack a feeling of support from their professors. This research and its findings are important because it shows a disconnect between student learning and the support that universities provide. My results suggest that students could benefit from having stronger connections with faculty within the university, which would help students feel more connected to their university and obtain a more personalized learning experience.

Miner, Sara

Institution: *UT - Utah State University*

Discipline: **Architectural and Interior Design**

Author/Contributors:
Sara Miner

Abstract Name: **Contemporary Sustainable Architecture**

Architecture and design often reflect socio-political concerns. For example, contemporary architectural practices focused on sustainable design and materials evidence the increasingly important role art, architecture, and design occupy at the forefront of conversations and solutions around climate change. As carbon emissions continue to rise and global climate change is becoming ever harder to ignore, it is imperative that architectural design incorporate sustainable materials and practices accessible to all. Using data from artists, architects, and designers, who are often working in geographic areas more susceptible to climate change, my presentation will focus on answers to the following questions: i. How does contemporary architecture and design reflect increased awareness of environmental concerns? ii. How have architectural and design practices changed in response to demands for sustainability?· Do developments in sustainable design correlate with changes in carbon emissions? iii. How are regions that are more susceptible to the effects of climate change leading discussions around sustainable architecture, technology, and design?· How is Utah addressing this at State and University levels?My presentation will focus on sustainable architecture, its historical roots, and its contemporary application to areas particularly susceptible to climate change. I will share my research and analysis of Utah-specific solutions to climate change, including the state's overall sustainability practices, the construction of LEED-certified buildings and environment-friendly designs on university campuses, and site-specific examples of sustainable design. This includes a case study I will conduct on-site of Community Rebuilds in Moab, UT, as well as first-hand study examples of sustainable architecture in Salt Lake City.Sustainable architecture is an exceptionally relevant and pressing issue. By bringing these disciplines into conversation with each other, my presentation will address the impactful ways art and design may lead the discourse around sustainability.

Minicozzi, Jason

Institution: *PA - Duquesne University*

Discipline: Sociology

Author/Contributors:
Jason Minicozzi

Abstract Name: **No Human is Illegal: The Peregrination of the Nomadic Homeless in Pittsburgh**

Homelessness is a propagating global crisis. In many US cities the unhoused face discrimination through bureaucratic legislation. These ordinances prohibit an individual from soliciting in urban settings. This legal exile of the unhoused revokes their 'right to the city', hence, alienating them from society based on their socio-economic status. These anti-solicitation laws are reinforced through architecture, policing, and public surveillance. Today, scholars identify this phenomenon as hostile or anti-homeless architecture; these designs mutate previously 'public' areas into derelict environments. These obstructions include, but are not limited to: armrests in the middle of benches, lids atop trash cans, and spiked ledges under roofed areas. Hostile and anti-homeless architecture differ in appearance. Hostile or defensive architecture's callousness led to its own demise; however, urban classist antagonisms ensued. Anti-homeless architecture (AHA) emerged as the latest 'solution' for the homeless epidemic. The inconspicuous nature of this architecture allows this practice to continue in modern America.My research, focusing largely on urban Pittsburgh, identifies inhibitive architecture and its resulting consequences. I utilized non-obstructive observations, geo-demographic analyses, and peer-reviewed secondary sources to depict the baneful effects of this architecture. These empirical methods postulate an increase in violent crimes due to inadequate food, shelter, and safety available in Pittsburgh. My research explores ways to design inclusive architecture coupled with redistribution of basic needs for the unhoused.

Minski, Ana

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Hannah Campen,
Ana Minski

Abstract Name: **Experiences of water insecurity and its relation to food insecurity, health, and well-being**

Water insecurity, characterized by uncertain access to, and availability of, clean water and poor water quality is an emerging concept in the field of nutrition. While most studies on water insecurity have been conducted in low- and middle-income country settings, water insecurity in the U.S. is documented, particularly among low-income and black, indigenous, and people of color (BIPOC) communities in both urban and rural settings. Provided the interconnections between food and water, scholars increasingly recognize the need for research strategies to better understand the role that water insecurity plays in human nutrition and well-being. Survey data were collected from residents of central Wisconsin. Chi-square tests of independence and logistic regressions were used to examine associations among key variables. Experiences of water insecurity and food insecurity were co-occurring among low-income participants but more frequently they were experienced independently. Experiences of water insecurity were associated with psychosocial stressors detrimental to mental well-being that may also impact nutrition. Most participants reported treating their water associated with a lack of trust with the quality of their drinking water. These findings have important implications for developing responsive interventions to support access to adequate food and water. Future studies to test the relationships between the characteristics of water insecurity identified in this study with food insecurity among low-income populations are warranted.

Mirao, Silverio Antoinio Nerat IV

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Brendan Pelto

Abstract Name: **Continuous Mobile Authentication with Multi Finger Touch Dynamics**

Mobile Devices are growing in use day by day causing a need for better mobile security. Mobile devices have some security features built into them already, but if the intruder has already unlocked the device those features will not work. Identifying where this security can be improved is a difficult task, however improvements in Touch Dynamics Authentication show that it could be used as a form of continuous authentication once the device has been unlocked. Often times users on a device will have very repetitive movements that humans can not detect, but a program can be trained to understand these patterns. In this research we will be looking into specifically Multi-Finger Touch Dynamics and attempting to work out three models that are able to detect an authentic user from an imposter. We will be extracting several features in order to train these programs and some include velocity, acceleration, and how many pixels each finger covers

Misirian, Kaitlyn

Institution: *VA - Liberty University*

Discipline: History

Author/Contributors:
Kaitlyn Misirian

Abstract Name: **Martha's Vineyard: The Island with Flying Hands**

Before the island was the epitome of New England culture and home to prestigious wealthy members of society, dozens of pristine beaches, and historic lighthouses, Martha's Vineyard was once a utopia for the Deaf. For more than two hundred years, Martha's Vineyard residents manifested an extremely high rate of profound hereditary deafness. They lived in blissful ignorance, unaware of the mainland ideas of disabilities and isolationism of those who differ from the "perfect human condition." Close-knit communities and multiple Deaf persons per family gave way to the island's unique version of sign language, Vineyard Sign Language, in which everyone was fluent. Vineyard Sign Language provided the island with a practical and functional communication system, and it later laid the foundation for American Sign language, a creole language composed of home signs and French Sign Language. As a result, the Deaf Vineyarders enjoyed access to every aspect of island society, including jobs, wealth, and relationships unhindered by their loss of hearing. The Deaf were church members, government officials, business owners, neighbors, and spouses, just like their hearing counterparts. Furthermore, "handicapped" was a mainland idea that never crossed islanders' minds. Instead, they viewed deafness merely as a normal variation of the human condition, like brown or green eyes, and blonde or brown hair. By the mid-1900s, the last of Martha's Vineyard's native signers passed away, and with them, the Vineyard Sign Language, the rich history of Deaf culture, and the normalization of disabilities in an ableist world.

Miskimen, Nick

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: **Music**

Author/Contributors:
Rafael Puga,
Nick Miskimen

Abstract Name: **Nightcap**

This piece was composed over the past year for a trio consisting of clarinet, alto saxophone, and piano by recent UWEC alum Jack Ford. It was written for clarinetist Rafael Puga and saxophonist Nick Miskemen. Performing new works help move classical music forward by ensuring that fresh perspectives are being heard. It also celebrates the collaboration between composer and performers. The preparation of this piece goes beyond a practice room and rehearsals and requires communication by everyone involved. This piece has an unusual instrumentation as clarinet, saxophone, and piano repertoire is very limited, thus adding more music options for future musicians.

Missenda, Kylie

Institution: ***PA - Westmoreland County Community College***

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Kylie Missenda

Abstract Name: **Short and Long-term Effects of Child Maltreatment**

The consequences of childhood maltreatment can and will cause both short term and long term problems on children. Yet how we help is important besides knowing the effects. What I have found through others research,childhood maltreatment can cause both short and long-term physical, psychological, and behavioral problems. Short-term effects could be physical and psychological. The physical effects are bruises, broken bones, and concussions. Besides the physical issues, abuse can cause psychological issues. Short term effects include but are not limited to sadness,anxiety, not being interested in their hobbies, and stress. These effects could lead to something more serious in the future or stay as they are and not lead into anything. Children might also have to grow up too fast and learn how to fend for themselves is a severe case of child neglect. The child abuse could be generational and is taught. Long term consequences could lead to issues contributing to society. The child may suffer health issues, such as impaired brain development. Other health issues that the abuse could cause are shaken baby syndrome, physical deformities, permanent scarring, and other disabilities. The possible psychological long-term effects are depression, anxiety, attention deficit hyperactivity disorder and other mental illnesses. Child maltreatment is a serious topic and the effects are as important as the child being abused and neglected. From the research I have found it is highly important to be aware of the short and long term effects. So for the future, people can know the effects. I’m doing this research for people to be able to look for the signs even in children while they're being abused to have the right plan and policies in action.

Mistick, Carly

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Physics/Astronomy

Author/Contributors:
Carly Mistick,
August Evrard

Abstract Name: **Refining the Scaling Relations in Galaxy Cluster Velocity Dispersion Bias Empirically**

The masses of galaxy clusters can be used to constrain cosmological parameters, as galaxy cluster formation and evolution depend on the abundance of dark matter and dark energy, which are represented in the cosmological parameters. Masses can be estimated as a function of richness, or the number of galaxies determined to contribute to a cluster's halo. Velocity bias bv, the ratio of galaxy and dark matter velocity dispersions, is introduced through each cluster's properties, conditioned on redshift, halo size, and stellar mass threshold. Recent research from four independent cosmological simulations indicates a "brighter is cooler" effect: more massive galaxies should have slightly smaller velocity dispersion than less massive ones. The current study attempts to validate and refine these scaling relations using data from recent large surveys. Effects due to cosmological redshift, galactic extinction, and impurities in the observed signal must be corrected. It is anticipated that newly obtained scaling relations will decrease the uncertainty in the method of estimating cluster mass as a function of richness. Methods for obtaining these scaling relations empirically will be developed and results will be presented.

Misurelli, Megan

Institution: *PA - Albright College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Megan Misurelli,
Pamela Artz

Abstract Name: **A Model System of Anesthetic Binding Sites in the Blood Investigated by NMR Spectroscopy & Spectrofluorometry?**

In biochemistry, macromolecular binding sites are regions of specificity in interaction with othermolecules. The aim of our current research is to investigate anesthetic binding to bovine serum albumin(BSA). The preliminary thought process of our research extends upon the work of Duboiset al.(1992,1993) and Xuet al. (1996) in their 19F-NMR investigations. In adapting from previous literature studies, we have constructed an overarching goal of our model study and initiated anapplicable setup for our respective studies using the anesthetic, isoflurane, and the protein, BSA. We aimto create a model system for anesthetic binding in the blood investigated through Nuclear MagneticResonance Spectroscopy (NMR);spectrofluorometry(Johansson, 1997). T2(spin-spin relaxation) measurements in NMR and intrinsic protein fluorescence are the selected targetedmethods. The work will result in an outline for relevant biophysical and biochemical experiments whereNMR and fluorometry methods are emphasized.

Mitchell, Tiya

Institution: ***OK - Southern Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Tiya Mitchell,
Anna Harper

Abstract Name: The Impacts of the Social Environment on Psychological Distress among Whites and Racially Minoritized Students

A lot of work has been done to describe the stressors associated with the experience of people in minority racial and ethnic groups in the United States. There are specific experiences in the world that impact psychological distress more directly than a person's race or ethnicity, as a general identity marker. These impacts include: attachment experiences, stigma and negative attitudes toward mental health diagnosis and treatment, and experience or lack of experience with psychological help seeking. Participants responded to questions regarding their attachment relationships, their attitudes about and intentions toward mental health support seeking, their level of psychological distress, and their personal demographic information. Results show that race and ethnicity did not predict psychological distress, nor did it account for a significant proportion of the variance in psychological distress. However, attachment styles and other-focused mental health stigma were significantly correlated with psychological distress. The study highlights the importance of attachment relationships in producing a positive sense of self and others, which impacts our ability to navigate stressors.

Mitrovic, Dijana

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Psychology/Neuroscience

Author/Contributors:
Dijana Mitrovic,
Jacob Munter,
Hannah Collier

Abstract Name: Parent-child weight-related conversations and body image development: Investigating the moderating effects of the parent-child relationship

The current research question explores how parent-child relationships can contribute to the effects of conversation about diet or weight on adolescent body image. Past research has shown the negative effects of mothers encouraging daughter's weight loss or dieting is buffered by mother's conversations about her own weight or diet. One possible explanation for this is that these bi-directional conversations are happening in a close, more cohesive relational context between mothers and daughters. This research uses a survey design to measure responses from participants on current relationship with parents (e.g., perceived mutuality, cohesion, parent-adolescent attachment), parent-child conversations about weight and diet, body image and disordered eating outcomes. Data in this study was collected from psychology students at the University of Wisconsin-Parkside, who responded to survey questionnaires via qualtrics. We predict that the stronger the parent-child relationship, the less negative impact conversations about body image and diet will have on adolescent body image and disordered eating. This research can help show the major effects of parent contributions to adolescent's perspective on diet and weight, in addition to highlighting key issues that could influence the impact of these types of conversation. With the growing amount of individuals experiencing low self-esteem due to poor body image and weight concerns, this research question is an important topic in today's society. Answering this research question will aid in understanding the effects of parent-child relationships on adolescent body image and disordered eating concerns.

Mleziva, Xavier

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Physics/Astronomy

Author/Contributors:
Xavier Mleziva

Abstract Name: **The Development of a Three-Dimensional Fluorescence Imaging Microscope**

The quality and cost of three dimensional imaging of live tissue in real time can be reduced by utilizing three dimensional scanning technology. This technology has already been developed in other areas of biology for looking at the topographical surface of snake skins and geology for testing the accuracy of ground penetrating radar. Adapting three dimensional scanning technology to create an inexpensive method of imaging live tissue requires utilizing open source software already in use and different methods of microscopy. Multiple open source software have been used in other experiments, including MeshLab, gprMax and QuSTo. The designs utilized in other experiments are either expensive, such is the case in the Martinez et al. paper published in 2021, which was used to study snake skins. On the other hand, some researchers use handheld three dimensional scanners and a turn-table. This method is the cheapest method so far and can be adapted further, by utilizing multiple cameras fixed in place and rotating the sample platform. With the collection of images from multiple angles at the same time and the rotation of the platform, the scanning process would be faster. A faster scanning process would improve scanning for time sensitive cases that can be seen in biology, and allow for three dimensional models that change over time.Theability to create three dimensional models of an environment in real-time is a tool that has many uses including molecule tracking. In the future, the addition of magnification would improve this set up allowing for the tracking of smaller molecules or bacteria.This research is working towards creating a fluorescence microscope that can be used for constructingthree dimensional models.

Mobeck, Makayla

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Lilianna Rolands,
Makayla Mobeck

Abstract Name: **Isolation of Jumbo Bacteriophages**

To date, there are relatively few known phages with genomes 200kbp or greater, which are classified as jumbo phages. This is likely due to their large physical size making them difficult to isolate using traditional methods as opposed to jumbo phages being rare. Their large size makes it difficult for jumbo phages to diffuse into typical top agar and allows jumbo phages to get caught in the filters used to remove bacteria from environmental samples. The goal of this project is to isolate jumbo phages from soil samples collected on campus. To overcome the barriers to isolating jumbo phages, several changes to the typical methods of isolation were tried. Larger pore filters and chloroform were used to remove bacteria from our samples without removing large phages. Low concentration top agar was also used during isolation and purification to better allow large phages to diffuse into the media, and we favored selection of pin-point plaques that could suggest physically large phages. Several phages have been isolated using these strategies and are being analyzed using transmission electron microscopy and gel electrophoresis techniques such as pulsed field gel electrophoresis. A selection of phages will also be sequenced to determine the length of their genome. At least one phage genome will be annotated using bioinformatics tools such as Glimmer, Genemark, BLAST, Phamerator, and HHPred.

Mobers, Lea

Institution: *GA - Kennesaw State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Lea Mobers,
Zed Carroll

Abstract Name: **Factors that Affect Perceptions of Gig-Workers**

According to Pew Research Center, 16% Americans have earned money on online gig platforms such as Uber or TaskRabbit at some point. However, research on how consumers select gig workers is still mostly underexplored. The purpose of this study is to investigate the potential impact of a gig worker's gender and self-presentation in their profile picture on consumer perceptions and choices. Specifically, we propose that smiling and quality of profile picture in terms of professionalism positively influence consumers' perceptions on the gig worker's competence, trustworthiness, and the likelihood of hiring them for a task. We also propose that these two factors will interact with gender, such that the positive effect of smiling is greater for female than for male workers, and the positive effect of professionalism is greater for male than for female workers. Lastly, we hypothesize that gender bias exists on gig platforms, such that male and female gig workers are more likely to be selected for tasks that are stereotypically aligned with their traditional gender roles. We conducted a 2 (gender: male vs. female) x 2 (smile: smiling vs. neutral) x 2 (professionalism: professional headshot vs. selfie) between-subjects experiment on Qualtrics to test our hypotheses. Eight fake worker profiles were created with different profile pictures to reflect the experimental manipulation. Undergraduate psychology students took an online survey where they were randomized to view one of the eight worker profiles. Additionally, we created one more worker profile that showed a smiling male in a professional headshot, which served as a comparison in each condition. We are currently in the process of data collection, which will be completed by December 2022. Data analyses will be completed by March 2023. Our findings will provide practical implications to gig workers regarding how to enhance their chance of being selected.

Mobley, Kierinn

Institution: *IA - Iowa State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Connor Davison,
Abigail Krull,
Kierinn Mobley

Abstract Name: **Creation of Anxa2 Deletion Mutants in Zebrafish Using CRISPR/Cas9 Gene Editing**

Annexin A2 is a calcium-dependent phospholipid-binding protein that facilitates angiogenesis via endothelial barrier maintenance and sprout formation. However, the functions of Annexin A2 are not well established in endothelial cells in vivo. The Annexin A2 gene in humans corresponds to a duplicated locus in zebrafish, called anxa2a and anxa2b. We are using CRISPR-Cas9 to make mutations of the Annexin A2 homologs in zebrafish to take advantage of the optical clarity of the early embryo to follow endothelial morphogenesis. Due to the possible overlapping functions of these homologs, we designed gRNAs that, when complexed with Cas9, targeted the 5' and 3' UTRs of both anxa2a and anxa2b. This was done to induce whole gene deletions instead of creating loss-of-function mutants through indel formation. These whole gene deletions would allow us to avoid genetic compensation induced by mutant transcripts. We also designed a tag-RFP construct flanked by short homology arms for integration into the deleted locus to visually track anxa2a and anxa2b expression during development. Here, we describe a whole gene deletion of anxa2a (14,172 base pairs) via CRISPR-Cas9 injection in fli1-egfp embryos. We have recovered a stable germline deletion in anxa2a. Our next steps are to induce a whole gene deletion in anxa2b for further functional analysis and create mutants homozygous for both deletions. This will allow for loss-of-function analysis of the Annexin A2 duplicated locus in zebrafish for a more complete phenotypic analysis and characterization of the genetic requirements of anxa2a and b during endothelial morphogenesis.

Modl, John

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
John Modl,
Maria Gini

Abstract Name: **Towards Cooperative Intelligence in Multi-Agent Systems using Deep Reinforcement Learning**

Much progress has been made in creating multi-agent AI systems in whichindividual agents cooperate to perform complex tasks, such as processing speech or performing real-time object recognition. This is possible through deep reinforcement learning, where agents learn how to behave through exploration and reward systems. Each agent's goal is to maximize reward, which occurs when probabilistic action is taken within the environment that aligns with the task specified. Action is determined through neural networks, algorithms that take inspiration from biological functions of the brain. My research asks, can a single neural network learn a short sequence of tasks and facilitate multi-agent cooperation? To test this, the ability of agents to work together without explicit instruction in a simulated environment to haul a heavy load from one place to another will be observed. The effectiveness of the neural network algorithm will be tested by measuring loss, or error, over time while varying environment size, starting location, and number of loads and agents. The experiments will be carried out with an existing two neural network algorithm baseline followed by a one neural network algorithm candidate which I create. I will analyze the performance of both approaches and compute if the algorithms can learn similar sequences of tasks and yield a comparable loss. For each experiment, the loss should change in real time as the agents try actions and either receive a reward or a penalty in response. I hypothesize that the learning of sequences of actions is possible, provided the architecture of the single neural network is sufficiently powerful. Exploring how agents learn and cooperate in simulation gives insight into how agents might behave when the scope of the problem and size of the environment are larger.

Moe, Emma

Institution: *MN - Hamline University*

Discipline: **Public Health**

Author/Contributors:
Emma Moe *Taylor Lander* *Sam Thompson*
Savannah Lyytinen *Serena King* *Laura Palombi*

Abstract Name: **Community Engaged Partnerships With Southeast Asian Community Health Liaisons, Leaders, and Health Care Professionals: A Pilot Project on Opiate Awareness, Overdose and Psychoeducation**

Opiate addiction and overdose is a major public health concern that disproportionately affects minority communities, yet little is known about the impact in Southeast Asian communities.1) Pilot a sustainable program of opiate awareness, pharmaceutical awareness, and education in Southeast Asian (SEA) communities. 2) Assess community needs around opiate education, prevention, and medical care for opiate addiction, and 3) Engage professionals (stakeholders) on SE Asian community needs.A three-part model included: 1) A train-the-trainer psychoeducational program delivered by community health liaisons (CHLs), 2) Stakeholder engagement around SEA opiate prevention, overdose prevention/reversal, and care (medical, mental health, pharmacy, and Narcan distribution professionals) and 3) Guided conversations with community leaders. Training sessions were delivered virtually, whereas community sessions varied in their delivery methods (verbally in a community's native language). Three community health liaison training sessions involved a train-the-trainer psychoeducational model on the nature of opiates, drug effects, pharmacist-patient communication, stigma, and community comfort in discussing opiates. A pharmacy professor delivered five two-hour training sessions for the CHLs. We held stakeholder conversations with pharmacy students, physicians, addiction counselors, and clinic supervisors. Common barriers identified were funding and availability of translators, stigma, transportation, and community awareness of resources available. Significant needs exist in SEA communities. First, we observed a lack of knowledge and awareness around opiates across communities. Program materials delivered in a narrative format were useful (per leader feedback). Several leaders and community members expressed concern about the community proliferation of online purchases of drugs marketed as painkillers. Third, community members may lack awareness of risks around opiates and addictive potential. Cultural factors and stigma prevent community members from seeking information and treatment, and there is a need for Narcan education and linguistically and culturally competent providers.

Moeller, Brenna

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Devyn Pfaff,
Brenna Moeller,
Ryleigh Lemanczyk,
Chrissy Headley,
Mary Endres

Abstract Name: **Racial-Ethnic Identity and Academic Success B**

There is immense discussion on what helps orhinders academic success. A person knowing who they are, no matter who, tends to know what they want and how to get it. This is not different in the academic setting. There are many different levels of understanding who we are within the culture from which we come. This study aims to connect several components of identity development with the resulting success in college. The aim is to see how the level of connection with one's racial-ethnic group, awareness of the perceptions by others and how one's racial-ethnic group is seen through the lens of academic achievement will impact the overall success in college. Other areas of interest in this study include college experience and how it impacts the motivation to attend classes and involvement in on campus activities connecting the student to the college leading to academic success. The final area that will be considered in this research is the level of college preparedness of the student and how the family or culture contributed to that preparedness. Correlational analysis will be completed through data collection in the spring semester of 2023.

Moglowsky, Keegan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Keegan Moglowsky *McKenna Roessler* *Lauren Weis*
Jennifer Muehlenkamp

Abstract Name: **Implications of COVID-19 on College Counseling Services**

Many aspects of college life were impacted by the restrictions set in place due to the Covid pandemic, especially when it came to mental health. During this time, the demand for counseling services increased and many students were reporting that the pandemic had negatively impacted their mental health (APA, 2020; Castonguay et al., 2021). Prior to Covid, studies have found that some of the most common concerns students present tocounseling with include anxiety, depression, and relationship difficulties (Cairns et al., 2010; Barr et al., 2011). It is unclear how the pandemic may have impacted the prevalence of these concerns on college campuses. One focus of our study was to uncover whether the most common presenting concerns have changed from pre-covid compared to post-covid. Another adjustment that was made due to Covid was the transition to treatment through an online setting. While these changes have been beneficial in managing depression, anxiety, stress, and other concerns, there have been mixed results when it comes to effectiveness compared to in-person treatments (Bambling et al., 2021). A second focus of our study sought to identify how satisfied patients of college counseling services were with online treatment. To complete our study, we looked at archival deidentified program evaluation data collected from a large Midwestern University System's counseling outcome evaluation tool including responses from our local campus. Our findings note that both at our campus and throughout thesystem, the most prominentpresenting concern both pre-covid (2017-2018) and post-covid (2021-2022) was anxiety, followed by stress and depression. Additionally, a majority (57%) of those who received counseling post-covid chose a telehealth appointment compared to an in-person appointment. Additional analyses examining group differences in satisfaction with counseling services are currently being completed. Implications of the results for counseling services on college campuses will be discussed.

Mohajeran, Seena

Institution: *CA - California State University - Fullerton*

Discipline: Computer Science/Information Systems

Author/Contributors:
Giovanni Martinez *Seena Mohajeran* *Khang Pham*

Abstract Name: **Titan Providence: Autonomous Drone System utilizing AI and GPS for Navigation**

Data and analysis of information have become a crucial aspect of society's current development, allowing accurate awareness of our environments, and benefitting maintenance, safety, and overall innovation. At the same time, the big data trend has grown in popularity, and the use of drones has also taken off to be considered valuable data collection devices. However, the control of the drone always lies with the pilot who uses visual tracking to determine its position and orientation. To overcome these issues, we propose an advanced technology that allows a drone to autonomously fly with little to no input from a human pilot. Differing from common Unmanned Aerial Vehicle (UAV) systems, Titan Providence implements AI vision with a GPS system, allowing for fully autonomous completion of a given "mission". Our objectives for this project include the construction and design of the drone framework, adaptive pathfinding, and awareness, in addition to task assignments.To achieve our goals, we integrated a Raspberry Pi with a compatible flight control module with additional telemetry and peripherals docked on a custom quadcopter chassis that allows modularity and expansions in accordance with a task's outline and requirements. By using these two systems in conjunction, we passively maintain the stability of the system through its inertial measurement unit (IMU) and individual multirotor electronic speed controllers (ESC), allowing further independence of the system's microcomputer. Regarding autonomy, the Raspberry Pi hosts the machine learning platform known as Tensorflow lite which would allow the drone to recognize obstacles and relay this information to the flight computer to avoid them. We also plan to utilize OSMNx which would allow the drone to create routes through urban environments where extra care and consideration for the law, powerlines, and private property is needed.

Mohamdjawad, Shireen

Institution: *CA - Irvine Valley College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: **Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel On-going Investigation**

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Mohamed, Amran

Institution: *CA - San Diego State University*

Discipline: Nursing/Health Science

Author/Contributors:
Amran Mohamed,
Catrinona Jamieson,
Kathleen Steele

Abstract Name: **Expression of ADAR1 and RBFOX2 in a Pediatric Leukemia Cell Line**

In this study, we performed quantitative real-time polymerase chain reaction (qRT-PCR) to determine gene expression levels of adenosine deaminase acting on RNA 1 (ADAR1) and <a href="https://www.ncbi.nlm.nih.gov/gene/23543">RNA binding fox-1 homolog 2 (RBFOX2) in the pediatric acute myeloid leukemia (pAML) cell line Kasumi-1, derived from a 7-week-old male leukemia patient. Previous studies have shown that RNA and protein expression levels of ADAR1, an RNA editing enzyme, are increased in hematologic malignancies (Zipeto et al, Cell Stem Cell, 2016). RBFOX2 encodes an RNA binding protein that is thought to be a key regulator of pre-mRNA splicing, a process shown to be dysregulated in certain cancers (Brautigam et al, Oncogene, 2014; Crews et al, Cell Stem Cell, 2016; Bonnal et al, Nature Reviews Clinical Oncology, 2020). We are interested in determining the levels of ADAR1 and RBFOX2 gene expression in Kasumi-1 cells to establish a baseline level of expression and better understand pAML and the connection to RNA splicing. Limitations include that we conducted the qRT-PCR reaction one time and pipetting errors could have resulted in unreliable data.Our results show low levels of RBFOX2 mRNA compared to ADAR1 in Kasumi-1 cells, indicating decreased expression of RBFOX2 compared to ADAR1 at the RNA level (Figure 1). This data contributes to our understanding of pAML and allows us to assess the expression of ADAR1 and RBFOX2 in Kasumi-1 cells. Future studies should be designed to understand the mechanistic role of ADAR1 and RBFOX2 in pAML and determine expression levels of additional genes in Kasumi-1 cells.

Mohamed, Muan

Institution: *NC - Winston-Salem State University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Julia Holgado,
Muan Mohamed,
Theofania Tsanos

Abstract Name: **Disparities Affecting the Knowledge of Female Pelvic Floor Disorders**

Pelvic floor dysfunctions (PFDs) are the most common problems faced by women post-partum, however, only a few have access to and awareness of physical therapy (PT). Due to its prevalence, PFD is now considered a public health issue, including urinary incontinence, fecal bowel incontinence, pain during intercourse, and pelvic organ prolapse. White women and women of color had no significant difference in experiencing PFDs, and yet women of color had statistically less knowledge of PFD conditions. African Americans and other women of color are also less likely than white women to recognize childbirth as a risk factor for urinary incontinence and pelvic organ prolapse. Research demonstrates that women with a higher level of education have greater proficiency of PFDs compared to those with a lower level of education. Socioeconomic factors play a major role in the knowledge of PFDs because a higher annual income can provide better access to education and medical care. The aim of this study is to assess women's knowledge of PFDs and raise awareness about the importance of pelvic PT and its benefits for women after childbirth in order to prevent PFDs. Given that there is a lack of research in this area, we aim to bridge the existing gaps regarding the roles that age, racial, and socioeconomic disparities play in the need for education about PFDs, as we believe that this knowledge will help lower PFD cases with the help of pelvic physical therapy. The subjects will be 30 females between the ages of 20 and 40, recruited from college campuses, community centers, and healthcare providers. Data will be collected via a survey consisting of open- and close-ended questions to ascertain women's knowledge and awareness of post-partum PFDs and available therapy options. The survey will be developed in consultation with two licensed pelvic physical therapists.

Mohr, Molly

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Molly Mohr,
Sudeep Bhattacharyya,
Sanchita Hati

Abstract Name: **Investigation into Brain Chemistry and the Chemical Hardness of Neurotransmitters and Antidepressants**

Antidepressants are prescribed to countless individuals worldwide to treat depression. It is crucial to understand brain chemistry and how various parts of the brain interact with different antidepressants. In the present study, using the Blugold Supercomputing Cluster, quantum chemical calculations have been performed to determine the chemical hardness of common antidepressants; chemical hardness is an important chemical property that provides information about molecular reactivity and selectivity. The present study provides an insight into the receptors within the human brain that interact with antidepressants following the Hard-Soft Acid-Base theory.1,2 The preliminary results of this computational study are presented here. The successful completion of this project could help develop new drug molecules with more specificity towards the target receptor and will have a more direct and immediate effect on patients dealing with prolonged depression.

Mohr, Ryan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Caleb Laufenberg,
Ryan Mohr

Abstract Name: **UWEC Campus Environmental Monitoring of PM 2.5 using Purple Air Monitors during residence hall demolition**

During September and October 2022, construction crews conducted demolition projects on two residence halls (Putnam Hall and Katherine Thomas Hall) on the University of Wisconsin- Eau Claire campus.Elevated PM 2.5 levels on campus could present a risk of throat and lung irritation, decreased respiratory function, and long-term health impacts to students, faculty and the workers on this project. Two EPA- and Wisconsin Department of Natural Resources-testedPurple Air monitors provided real-time monitoring of PM 2.5 levels in two locations on campus within 50 meters of the worksites. Hourly PM 2.5 measurements from each Purple Air monitor were corrected using the EPA correction factors and graphed alongside PM 2.5 measurements recorded by the WDNR, which served as a control. Periods when demolition activity occurred were established and detailed in data. Environmental monitoring was conducted to determine if the demolition activity was a source of increased PM 2.5 pollution as a health risk to the general campus population of students, staff, and faculty. The hourly and average PM2.5 levels measured on the UWEC campus were typically higher than the WDNR monitor between September 5th and October 5th, 2022. However, increases during or immediately following demolition activities were not apparent.

Mohsinuddin, Emaan

Institution: ***IL - North Central College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Emaan Mohsinuddin

Abstract Name: An Autoethnography Exploring the Relation Between Fashion, Self-exploration, and Perceived Power in Milan

Dating back to the Renaissance, fashion has been an expressive means to share identity as well as showcase status and power (Currie, 2017). Starting off as a male-dominated practice, it quickly became a channel for women to voice their opinions and beliefs. Despite its stereotype of being used only for shallow, appearance-based purposes, society heavily relies on fashion for a variety of significant reasons. For example, governments trying to control certain populations and those populations protesting back. The current hijab protest in Iran which started October of 2022 is a perfect example. Fashion is also a way to improve one's mood or to project a specific message. The research at hand organizes data into an autoethnographic format, which provides reflective data analysis based on personal observations taken during time spent abroad in Milan, Italy, fashion capital of the world. Autoethnography is a qualitative research method used to "systematically analyze" a researcher's experiences when interacting with a specific community, often from a different lifestyle, in order to understand the culture (Adams, Bochner, Ellis, 2011). Using photographs, audio recordings of interviews and personal reflections, as well as written observations of Milanese everyday fashion and culture, the importance of cultural background, childhood experiences, and identity-based beliefs were found to be some of the most defining features when creating and adhering to specific fashion styles and tastes. Fashion is much more than the surface level act of clothing the body or conforming to the latest trends. It is a story through which people express themselves to the world. It is an embodiment of our attitudes, values, and experiences. This autoethnography adds to the growth of an emerging conversation about changing the narrative through which fashion is seen and used in relation to self-exploration and perceived power.

Mohyuddin, Hashir

Institution: ***NJ - Kean University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Hashir Mohyuddin

Abstract Name: Comparisons of Open-Source Automatic Speech Recognition Programs on Heterogeneous English Speakers

The growing mainstream appeal of virtual assistants, such as Amazon's Alexa and Apple's Siri, leaves users with heavy non-native English accents and even regional American English accents and dialects, such as unable African-American Vernacular English, to successfully use virtual assistants without the intentional modification of their speech or pronunciation. Our research study compares current open-source Automatic Speech Recognition (ASR) packages in their default state "factory" pre-trained model settings from Mozilla's DeepSpeech, Nvidia's NEMO, and Meta's (formerly Facebook) Flashlight ASR based on Wave2Letter++ on their ability to transcribe accented English from various non-native English speakers.We choose four non-native English speakers of Cantonese, Vietnamese, Arabic, Portuguese, and our control group of native American English speakers. Two noise audio tracks (city park, and subway station) are overlaid on clean speech files at -20db to simulate real-world conditions and then sent to a denoiser. These files are fed into the ASRs and text outputs are compiled into a python script used to find the Word Error Rate (WER). Our results show that ASRs do have issues transcribing non-native English accents versus English. Even native regional non-standard English accents produce an increase in WER compared to their counterparts. This study aims to raise awareness and highlight these inequalities for minorities whose inclusion is left as an afterthought. Companies that design these ASRs need to be mindful of the growing number of users who speak in various dialects, accents, and languages and ensure that their technology is inclusive to all people.

Moland, Katryna

Institution: *PA - Shippensburg University*

Discipline: Social Work

Author/Contributors:
Katryna Moland *Emma Tennant* *Emilie DiGiacomo-Hippenstiel*

Abstract Name: **Burnout, Compassion Fatigue, and Compassion Satisfaction in the Social Work Field Practicum**

Field social work students are often in contact with traumatized clients who go through a variety of negative life experiences such as abuse, disaster, drug dependency, crime, and illness. These students are experiencing vicarious exposure to such negative life events, and therefore, may develop compassion fatigue and burnout. Whereas both compassion fatigue and burnout report negative consequences of working with traumatized clients, compassion satisfaction adversely contributes to the positive well-being of the workers themselves. Compassion satisfaction stems from the satisfaction that is gained from helping others, and this feeling may serve to limit the effects of both burnout and compassion fatigue.This research serves the following purposes: addressing the existence and implications of burnout and compassion fatigue among social work students in field practicum; assisting in determining the need for additional attention in burnout- and compassion-fatigue-prevention for future field practicum students; determining the prevalence of compassion satisfaction among students; and drawing on the benefits of compassion satisfaction to provide strategies to better social work education.The research uses a classic experimental design: pretest/posttest, control/experimental group design. Social Work students who are in field practicum of the Spring 2023 semester are the experimental group, while students who are in Preparation for Practicum class, will be the control group. Both groups took a 30 item self-report questionnaire called the Professional Quality of Life Scale (ProQOL). This scale is equipped with subscales for burnout, compassion fatigue, and compassion satisfaction, thus measuring both the positive and negative effects in working with vulnerable and traumatized clients. As this is an experimental design, both groups took the questionnaire twice – once in the Fall and once in the Spring. This questionnaire assesses the three variables to see if they have fluctuated with more prolonged experience to working with clients, in terms of the experimental group.

Molenaar, Michael

Institution: *UT - University of Utah*

Discipline: Education

Author/Contributors:
Michael Molenaar *Frankie Santos Laanan*

Abstract Name: **An Exploration into the Relationship of Disabilities and the Risk of Sexual Assault Victimization Among Female College Students**

Sexual assault on college campuses is a well-documented, yet still pervasive issue among U.S. colleges and universities. Female college students are three times more likely to experience sexual assault compared to all women. To combat sexual assault victimization, previous studies have identified certain risk factors that increase the odds of college-campus sexual assault. This study explored the relationship of female college students with disabilities and the risk of experiencing sexual assault. Specifically, the study examined the possible influence and increased odds of risk factors identified in previous studies. The research questions guiding this study include: 1) Do female students with disabilities have a greater risk of experiencing sexual assault victimization than those without disabilities? 2) Do previously identified risk factors increase the odds of sexual assault for students with disabilities? 3) Does a specific disability impact the odds of sexual assault victimization?This quantitative study utilizes a survey research design. The national data derived from the American College Health Association's National College Health Assessment III (ACHA-NCHA III). This survey collects data on student health habits, behaviors, and perceptions and highlights the salience of emotional well-being. The sample includes female respondents (n=100,000+) attending public and private four-year institutions in Fall 2020, Spring 2021, Fall 2021, and Spring 2022.Data were analyzed using descriptive and inferential statistics (e.g., frequencies, independent samples t-tests, and logistic regression).Preliminary results indicate female students with disabilities have higher frequency of being sexually assaulted than those without disabilities.The logistic regression analysis results found disability status produced greater increased odds for sexual assault than other commonly cited risk factors. The results could inform university leaders, student support services, and student affairs professionals about disability factors as potential risk factors for sexual assault victimization.

Molina, Laura

Institution: *TX - The University of Texas at El Paso*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Laura Molina *Saqlain Zaman* *Aaron Rodriguez*

Abstract Name: **3D printed flexible piezoelectric sensor array with BTO-PDMS**

Recent research and advancements in the Direct Ink Write 3D printing technique have enabled the possibility to incorporate multi-material 3D printing of different materials with freedom of design to complete functional and integrated sensors in one-step fabrication methods. This work implemented multi-material DIW printing method to manufacture a lead free flexible piezo electric sensor array for pressure mapping and characterized the printed sensor array for different applications. Barium titanate (BTO) was selected as the piezoelectric component and was mixed with 50wt% ratio to PDMS to form the elastic composite with great piezoelectric properties. For better polarization and output voltage collection, 11wt% multi-walled carbon nano tubes (MWCNTs) with PDMS electrodes were also 3D printed as part of the multi-material printing. SEM of the cross section of the printed parts were checked to evaluate the proper dispersion of the filler into the PDMS matrix and to confirm the interlayer bonding between the BTO-PDMS and MWCNTs-PDMS layers. A graphical user interface (GUI) was designed to showcase the pressure mapping ability of the sensor array and it was validated using irregular loads on multiple nodes of a 4x4 3D printed array sensor. To further evaluate the sensor array, constant cyclic loads of 30N, 60N, 90N and 130N were applied on a single node and the sensor generated responses are highly repeatable for each of the loads and do not drift with repeated cycles. It was also identified that, with the increase of force, the output peak-to-peak voltage also increased linearly and the variation of output voltages at each cyclic loads are negligible compared to the output voltages. Since the BTO-PDMS sensor can turn mechanical deformations into electrical energy, it can have several applications such as wearable sensors for health monitoring, energy harvesting, powering electronics, manufacturing of soft robotics devices with properly integrated materials, etc.

Monatukwa, Yuliet

Institution: *ND - University of North Dakota*

Discipline: Chemistry/Materials Science

Author/Contributors:
Yuliet Monatukwa,
Vlastimil Vyskočil

Abstract Name: **Silver Solid Amalgam Electrode Electrochemical Detection of Nitroxoline**

Nitroxoline is a nitroquinoline derivative that has clinical applications in the treatments of cancers and cardiovascular diseases, but there are limitations to the ability to monitor its metabolization within the body after the initial dose and to detect nitroxoline within the environment at large. The bioreductive properties that these treatments capitalize on also make nitroxoline an ideal analyte for voltammetric detection methods. Voltammetric methods have the advantages of being less expensive and time intensive than other spectroscopic methods while still maintaining sensitivity. To determine the limits of detection (LODs) and quantitation (LOQs) of nitroxoline in various water samples, direct current voltammetry (DCV) and differential pulse voltammetry (DPV) methods were optimized using a mercury meniscus modified silver solid amalgam electrode (m-AgSAE) and nitroxoline standard. The optimal pH of the solutions was determined with and without electrode regeneration for both DCV and DPV to be pH 5.0. Calibration curves were then created for deionized water, drinking water, and river water. For deionized water, use of DCV obtained LOQ values four times lower (0.18 μM) than DPV (0.85 μM); however for river water, the LOQ values were similar for both DCV (0.34 μM) and DPV (0.37 μM). The results suggest that both techniques provide comparable detections, but that DPV has a higher upper limit of linearity (60 μM) than DCV (10 μM) in river water.

Monroe, Alexander

Institution: *NY - SUNY Brockport*

Discipline: History

Author/Contributors:
Alexander Monroe

Abstract Name: **The Most Influential Women to Combine the Women's Suffrage and the Birth Control and Abortion Movements**

The most influential women that combine the women's suffrage movement and the birth control and abortion movements in America are not agreed upon among historians. Due to there being a lack of agreement among historians there is no specific literature labeling any of the women that participated in both movements as the most influential. This paper addresses the two most instrumental women to combine the women's suffrage and birth control and abortion movements, Emma Goldman, and Margaret Sanger. Through the study of historians Simone Caron, Linda Gordon, James C. Mohr, and Leslie Reagan's studies of abortion and birth control laws and policies in the United States between 1880 and 1940 this paper shows how the birth control and abortion movements began and proceeded. Next through the actions of Emma Goldman and Margaret Sanger, as explained by Candace Falk and David M. Kennedy, as well as their own writings, between 1880 and 1940 in both the women's suffrage and the birth control and abortion movements, this paper will show why these two women are the most influential women to combine these social movements in the United States. This paper argues that Emma Goldman and Margaret Sanger were the most influential women in the United States regarding the combination of the women's suffrage movement and the birth control and abortion movements. In conclusion this paper through its study of the history of abortion and birth control policy and the actions of Emma Goldman and Margaret Sanger, labels these two women as the most influential women in connecting the women's suffrage and the birth control and abortion movements.

Monte, Victoria

Institution: *IL - North Central College*

Discipline: Sociology

Author/Contributors:
Victoria Monte

Abstract Name: **The Mythology of Baseball: How the New York Yankees Used the American Dream to Achieve Cultural Ubiquity**

Professional baseball relies on the ethos of America to retain the social significance granted to the sport in the early twentieth century. Deemed America's National Pastime, baseball continues to evoke feelings of tradition and leisure, where friendly competition opens the door for America's values (simultaneous sportsmanship and self-actualization) to shine. The New York Yankees, one of the sport's most historically successful organizations, provide a prime lens through which to view baseball's relationship with Americana. While various works of scholarship analyze the different factors connecting the American Dream to baseball, or use the Yankees as a path to understanding, for example, economic trends in sports, this research project aims to synthesize those sources and external phenomena to answer the question: How do the New York Yankees utilize the American Dream to maintain cultural ubiquity? The team, through both reputable and infamous popularity, has become a symbol of success and tradition within and exceeding the world of sport. In our research, several features of Yankee history were examined with a focus on iconography and mythology creation. First, timing, or the importance of when the Yankees were created, moved to the Bronx, and dominated on-field competition. Second, location, or the impact of holding residency in New York City, and specifically the South Bronx, on the cultural significance of the Yankees. Finally, personnel, or the Yankees' constant production of transcendent players who, in themselves, represent the ideals of the American Dream. When these features are brought together, along with the aforementioned studies of both baseball's connection to American ideals and the business of the New York Yankees, it becomes clear that the team's past is synonymous with the narratives of America. The Yankees, therefore, maintain their cultural ubiquity by being a thematic extension of America's valued concepts of meritocracy, opportunity, and tradition.

Montero-Murillo, Matteo

Institution: *PA - Moravian University*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Matteo Montero-Murillo

Abstract Name: Transsexual Sex Ed: Understanding Body, Identity, and the Self

There is a large stigma surrounding comprehensive sexual education, even worse so for one that actively engages with and includes the queer community. The lack of sexual education causes a lack of understanding in all persons regarding not just sex and intimacy, but consent, reproductive health, mental health, self-esteem, and body positivity. While there is more accessible sexual education for lesbian, gay, and bisexual individuals, there is a large disregard for the sexual well-being of transgender individuals. This project intends to investigatethe sexual habits of transmasculine individuals and the ways transgender people navigate sexual relationships and intimacy in order to fill the void of transgender sexual health but to also create a zine at the completion of the project with the findings and advice gained from research interviews. Themes within the project include deconstructing medicalized language, de-pathologizing trans people's sexualities with the sharing of sexual education and stories, and helping improve not just the sexual knowledge, but the intersections of it with intimacy and self-esteem for trans people and people who engage intimately with trans people. The primary method of data collection is to compare and contrast established knowledge (books, articles, journals) on transgender sexual education with research interviews conducted with transgender individuals and partners. Participants sought out will be transmasculine individuals and their partners, all over the age of 18. These research interviews will seek to gather first-hand experiences from a diverse group of transgender and cisgender individuals into the unspoken aspects of sexual intimacy, including navigating intimacy with endocrinologically changed bodies, negotiating sex with dysphoria, and more. These research interviews intend to both affirm and add to established texts on sex, intimacy, identity, sexuality, and bodies.

Monticello, Krystina

Institution: *KY - University of Kentucky*

Discipline: Psychology/Neuroscience

Author/Contributors:
Krystina Monticello

Abstract Name: Negative Affect Across the Menstrual Cycle in Individuals with ADHD

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder that exhibits striking gender differences in symptoms, comorbidity, and associated problems. Females with ADHD become particularly impaired across adolescence and around puberty, experiencing increased rates of depression, anxiety, conduct problems, and suicide attempts. Adolescence may be particularly risky due to the dramatic rises in reproductive hormones and onset of menstrual cycle characterized by cyclical hormonal changes. The goal of the current study was to examine hormonal effects on affective symptoms across throughout the menstrual cycle in individuals overrecruited for ADHD. We have hypothesized that mood symptoms such as depressed mood, anger, anxiety, and feeling overwhelmed would increase at the end of the menstrual cycle as estrogen levels decrease. Participants were 43 individuals aged 18 to 25 who menstruate and were not taking any hormone-based medications. Participants completed the Daily Record of Severity of Problems (DSRP), a 23-item measure used to assess affective symptoms, at four time points across their menstrual cycle (mid-follicular, post-ovulatory, mid-luteal, perimenstrual). Within-person averages and deviations from average at each time point were calculated then averaged across participants by phase.Linear mixed-effects models were used to determine significant changes in symptoms across the menstrual cycle. Results indicated significant decreases in anger (p=.018) during the mid-follicular phase and anxiety seemed to increase near the end of the cycle but did not reach significance (p=.078). Significant changes in depression and feeling overwhelmed were not apparent. Altogether, individuals with ADHD appear to experience some significant changes in mood symptoms across the menstrual cycle that may impact comorbidity and impairment. These findings contribute to understanding of sex differences in ADHD and reveal possible mechanisms for the increased impairment seen during adolescence in females

Moore, Jeffrey

Institution: *OK - University of Central Oklahoma*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
JEFFERY MOORE

Abstract Name: **Kendo_Fighter_Trainer**

The first computer controller machine for Kendo self-training was invented in 2005 by Prof Young-Bong. Bang from the Manufacturing and Mechatronics Lab of Seoul National University in South Korea. The Japanese kendo fighting robot, known as MUSA, weighed 150 pounds, and was 65 inches tall with a central processing unit that employs several sensors and digital cameras for tracking opponent's motion and assist in counterstrikes. Despite the accuracy and strength of counterattack maneuvers, the response time of the Kendo fighting companion was relatively slow mostly because of the insufficient speed of its processing unit, and the limited mobility of its motion transmission mechanisms. Several design upgrades were made to improve its mobility at a marketable price. Unfortunately, to our knowledge, an affordable self-training Kendo fighting companion is yet to be developed and manufactured, which bring us to the subject of our current investigation. In our ongoing project, we reinvented the original kendo companion blueprint and designed a lightweight self-training arm that is capable of reproducing Kendo attack and defense maneuvers. For improved mobility, the kendo-Arm is driven by a set of spherical and monopolar gears housed in a ball and socket joint. The spherical motor concept was first developed in 2021 by researchers Kazuki Abe, Kenjiro Tadakuma and Riichiro Tadakuma from the Yamagata University, Yamagata Japan and Tohoku University, Miyagi Japan. An improved version of this concept will use a Raspberry Pi single board computer to repeatedly processes several digital camera images of a color labeled arm from the computer. Then it will transmit motion coordinates to an imbedded driving mechanism that employs DC geared motors and Arduino controllers. The driving mechanism carefully adjusts the rotation and precession of the monopolar gears for precise and reliable counter strikes.

Moore, Samuel

Institution: *GA - Kennesaw State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Samuel Moore

Abstract Name: **Designing and Synthesizing a Warhead-Fragment Inhibitory Ligand for Ivyp1 through Fragment-Based Drug Discovery**

Fragment-based drug discovery (FBDD) is a powerful tool for developing anticancer and antimicrobial agents. Within this, magnetic resonance spectroscopy (NMR) provides a comprehensive qualitative and quantitative approach to screening and validating weak and robust binders with targeted proteins, making NMR among the most attractive strategies in FBDD. Inhibitor of vertebrate lysozyme (Ivyp1) of Pseudomonasaeruginosa serves as an excellent target because of its potential druggability and bacterial implications in clinical prognosis for cystic fibrosis and immunocompromised patients. This study uses current NMR and biophysical techniques to develop a covalent, fragment-linked warhead inhibitor for Ivyp1 through synthetic methods, warhead linking, and intentional fragment growth. The protein of interest was expressed using commonly recognized biochemical and chromatographic techniques, with supplemental procedures for isotopic labeling as required in multinuclear NMR experiments. This work has chemically elaborated a prior fragment hit with yield and purity suitable for subsequent studies. Coupling this product with promising warheads is ongoing and preliminary results of this process will be presented. While this work is grounded within biophysical and synthetic chemistry, this project will include several visual elements that integrate graphical and scientific ideas for a broader audience. One primary component will involve visualization of fragment binding using structural and graphical software and three-dimensional ray-traced rendering to suggest modes of interactions. Subsequent efforts will determine the structure-activity relationships between the warhead-fragment complex and Ivyp1, compared with standalone compounds, to indicate how calculated ligand growth increases potency.

MOORE, Taylor

Institution: *IA - Iowa State University*

Discipline: Sociology

Author/Contributors:
Taylor Moore

Abstract Name: **Fashion, Resistance, and Black Liberation: 1970s and Today**

Dress showcases cultural, social, and political attitudes. Historically, and today, dress has been used to articulate liberation, representation, and resistance. Black Americans have continued to fight for equity within White society through personal fashions, styles, and aesthetics. In the 1970s, members of the Black Panther Party and other activists developed and wore different styles representing Black liberation. These activists contributed to soul style development by wearing berets, pins, patches, leather and dark colors. Today, Black Americans who are part of The Black Lives Matter movement are also engaging in style narratives of resistance, such as shirts with powerful statements. The Black Lives Matter movement is about conquering economic, racial, and social injustice in society. Our exhibition showcases the evolution of fashion by incorporating the most powerful fashion pieces capturing the transformation of style over decades of black generations. This presentation is illustrating the exhibit and research held at the Textiles and Clothing Museum at Iowa State University on April 28th, 2022. We usedvarious primary and secondary sources, as well as textiles and clothing from Iowa State University's Textile and Clothing Museum. For secondary sources, we researched "When they call you a terrorist: A Black Lives Matter Memoir" by Patrisse Khan-Cullors, "Liberated Threads" by Tanisha C. Ford, and several other sources to help articulate the goals of fashion resistance. The exhibition is important in highlighting the shift of Black fashion from the 1970's and today by incorporating apparel and accessories that capture the ways in which Black people use fashion in liberation and resistance movements across time.

Morais, Lindsey

Institution: *WV - West Liberty University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lindsey Morais,
Martin Hruska

Abstract Name: **Use of Nanobodies to Measure PSD-95 Synaptic Nanoclusters in Dendritic Spines**

Precise localization of proteins within micrometer sized compartments like synapses is vital for normal brain function and plasticity. Super-resolution imaging has begun to reveal exquisite organization of proteins in pre- and post-synaptic compartments with unprecedented resolution. However, the use of primary and secondary antibodies in immunostaining procedures to visualize endogenous proteins has placed an upper limit on the resolution that is possible with super-resolution imaging. Additionally, protein-rich post-synaptic densities (PSDs) have been especially hard to label using conventional antibodies. Here we use tau-Stimulated Emission Depletion (STED) super-resolution imaging and photon counting to compare the efficiency of synapses between conventional antibodies and single-domain fluorescently conjugated camelid nanobodies that are 10x smaller than antibodies. Focusing on the most abundant protein of PSDs – PSD-95, we demonstrate that nanobodies significantly improve resolution compared to conventional primary-secondary antibody protocols. Furthermore, nanobodies show improved efficiency of labeling of post-synaptic specializations as determined by colocalization with pre- synaptic protein Bassoon. These findings demonstrate that nanobodies reveal more detail about nano-scale organization of subdifraction synaptic compartments providing opportunities to discover critical gaps in knowledge about synaptic function and dysfunction. In the future, we aim to use this methodology to study homeostatic plasticity of dendritic spines and their corresponding synapses in response to amyloid-beta produced during Alzheimer's disease.

Morales, Manuel

Institution: *TX - The University of Texas at El Paso*

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Blancas,
Jose Luis Herrera,
Manuel Morales,
Valeria Valencia,
Daniel Flores

Abstract Name: **Efficacy of Social and Physical Support for Cancer Patients**

Cancer is the second leading cause of death in the United States. In addition, cancer treatments provoke harsh side effects that demand extra strength from the patient. Cancer causes lifestyle modifications that can be detrimental on the patients' health; however, healthy habits can potentially increase the chances of a positive prognosis. Additionally, physical, and social support has proven to help patients in their fight against cancer. Since the lack of physical and social activity in patients with cancer has been shown to correlate with mental and cognitive decline, ultimately reducing quality of life, the purpose of this study is to examine the relationship between physical activity and quality of life in patients with cancer And increase their overall quality of life.This project included eight female participants that are currently struggling with cancer, or the cancer is in remission. The program consisted of group discussions, fine motor movements, and various physical activities twice a week for three weeks. Using pre/post intervention questionnaires and a dependent t-test, the significance of social and physical activities amongst the participants were analyzed. The dependent t-test showed a significant difference (t=-3.729, p=0.007) in the overall quality of life between pre and post program. These preliminary results imply that implementing a support group such as Healthy Habits that includes the use of physical and social activity, improves the overall quality of life of patients with cancer. In conclusion, the program created an additional outlet for individuals with cancer to find a relatable support group that can aid with daily struggles. Further analyses in a larger sample and with longer duration will provide stronger evidence about the relationship between physical activity and quality of life in patients with cancer.

Moreland, James

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
James Moreland,
Theodore Wild

Abstract Name: **Obtaining a complete set of reference DNA sequences for North American bladderworts (Utricularia)**

Carnivorous aquatic plants in the genus Utricularia, known as bladderworts, are fascinating for having complex snap-traps, for lacking roots, and for having branched shoots that function like underwater leaves. There are 19 bladderwort species in North America, including nine that are native to Wisconsin. Bladderwort diversity has been studied in a phylogenetic context before, but curiously the existing data are incomplete for North American species. Specifically, there are gene regions for which not every species has been sequenced, and the missing data make it impossible to identify any one plant using DNA sequence comparisons, or truly to construct an effective phylogeny for the genus.We plan on using the findings of this study to enable new methods for identifying unknown species. Further studies can be conducted once a full catalog of DNA sequences for nuclear and chloroplast DNA is acquired because currently there are species that are missing DNA sequence data for one or more of the gene regions that are commonly used for Utricularia. There are several species in this genus that have not been sequenced for one or more gene regions, and this makes it impossible to identify the plants confidently using DNA sequence data.We used genes from the nucleus (internal transcribed spacer, or ITS) and the chloroplast (rps16 gene, matK gene, rpl20-rps12 intergenic spacer, trnL-F intergenic spacer) to fill in missing data and construct updated phylogenetic trees for Utricularia. These regions were chosen because they have already been sequenced for a large number of Utricularia species, as part of a phylogenetic study of the genus. For the first time ever, we confirmed close relationships between species pairs (e.g., U. inflata and U. radiata) that could not be compared effectively before.

Moreno, Cristian

Institution: ***IL - North Central College***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Cristian Moreno

Abstract Name: **The Grandparent Study**

According to the results from a study done by “Zero To Three,” the grandparents of one in four children under the age of five are the main caregivers (2017). Therefore, it is important to understand the experiences that grandparents have in locations that they frequent with their grandchildren. This study seeks to improve the understanding of the motivations and the possible challenges faced by grandparents when visiting informal learning spaces with their grandchildren.Data were collected at two suburban museums serving young children and their families. All participants were grandparents recruited during their visit to the museums. The survey utilized 12 statements to assess the motivators and 13 statements to assess possible challenges faced by the participants. A 5-point rating scale was used to respond to the statements. In addition, a comment section was included for additional motivators and challenges. The survey concluded with a section addressing the participant's basic demographic information.163 total surveys were collected including grandmothers (N=119) and grandfathers (N=39). The survey found that the top three motivators were: quality time, family time, and learning about children’s interests. The top three challenges faced by grandparents were: physical demands, not being comfortable taking my grandchildren by myself, and other places available. Our results found that grandfathers, in comparison to grandmothers, report a decreased level of enjoyment in museums (p=.007) and an increased concern about the cost of museums (p=.005).Grandparents often have a strong influence in the lives of their grandchildren. It is important to further understand the motivations and challenges faced by grandparents. By better understanding, the motivation and challenges institutions can adapt current systems and offer improved and effective programming.

Moreno, Jose

Institution: ***IA - Iowa State University***

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jose Moreno

Abstract Name: **Assessment of Damage and Recovery of Infrastructure in Puerto Rico after Recent Hurricanes**

Puerto Rico is a tropical island, and due to its location, many hurricanes occur. This research consists of analyzing the resilience of the electrical infrastructure in Puerto Rico before extreme weather events such as floods, tropical storms, and hurricanes. In 2017 Puerto Rico suffered from Hurricane Maria (category 5), leaving the island without electricity for more than a year. Then in 2022, Hurricane Fiona (category 1) impacted the south of Puerto Rico, leaving the island without electricity for more than 2 weeks. The investigation was carried out based on obtaining information from various sources, such as an interview with the community that was affected, a 3D lidar scanning of the affected electrical infrastructures, photographs, documents made by the LUMA electricity company, and observations. The combination of 3D lidar scanning with drone footage of the affected area gave an idea of the damages in the distribution systems and the surrounding terrains. After obtaining the results of our investigation, the recommendations that can be offered so that the electrical infrastructure of Puerto Rico requires a major upgrade and the design standards for the distribution systems need to be more stringent and consistent to be able to stop outages from happening for a long period of time.

Moretti-Hitchcock, Sela

Institution: *CA - Occidental College*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Sela Moretti-Hitchcock

Abstract Name: **Justifying Juvenile Justice: Good-Faith Decision-Making to Protect Children?s Futures**

While the juvenile punishment system in the United States purports to punish on the basis of rehabilitation, this goal is often not reached. Aside from the general problems that rehabilitative models of punishment pose in determining when a person has been adequately rehabilitated, many juveniles are often isolated and not provided with the resources to appropriately address the problems that may have led to committing a crime and are not provided with a sufficient path for reintegration to the community. The most egregious example of which occurs in the sentencing and parole decisions for individuals that have been sentenced to life in prison with the possibility of parole for crimes committed as juveniles.In order to respond to juvenile crime effectively, we need to look to the child's right to an open future as set out by philosopher Joel Feinberg and adopt a narrative-integrity approach to decision-making that embraces elements of restorative justice. The child's right to an open future is a right possessed by children to have their future rights and interests protected until they are able to assume them, and it is the duty of the adults in the child's life to safeguard them (Feinberg 2007). In this research, I argue that responding to crime using this as a guide for decision-making and approaching our judgment with an interpretive lens that makes repentance a collaborative endeavor is a better model for protecting children's futures than rehabilitation.

Morgan, KC

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
KC Morgan,
Dayja Palma,
Shailyn Kendrick-Dickerson,
Tania Reeves

Abstract Name: **Sustainability of Resources for College Food Pantries**

Over 40% of college students are food insecure. Students in need are 43% more likely to fall behind in classwork and drop out of college. Students with food insecurity are also more likely to develop severe mental health conditions like depression, anxiety, low self-esteem, and loneliness. This study seeks to explain what factors contribute to sustainability of resources in university food pantries. The purpose of sustainability research is to find new and efficient ways to meet the needs of students who are food insecure in college. The student researchers explore the issue of sustainability of resources within college settings and how it impacts the resources obtained by grants and donors. The student researchers developed the following question: What are the factors involved in the sustainability of resources within college food pantries? The student researchers used 16 scholarly journal articles to inform their research on the factors that contribute to the long-term sustainability of food pantries in institutions of higher learning. Researchers using purposive and snowball sampling to identify a minimum of 100 participants with the help of the public directories to complete the questionnaire.The student researchers identified three common concepts within articles: factors of sustainability of food pantries, barriers and obstacles to successful food pantry use, and pantry development. The information gathered from the articles assisted the student researchers in question development for their survey.This research aims to identify the factors in sustaining a college food pantry through increased use. This information is important in attaining the researchers' overall goal of aiding the Tarleton Purple Pantry in developing a plan to sustain resources through Tarleton State College's rapid growth in enrollment.

Mori, Haruka

Institution: ***VA - George Mason University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Haruka Mori,
Callista Skaggs,
Zachary Messegee,
Xiaoyan Tan

Abstract Name: Synthesis and Characterization of Polar Magnetic Materials

Materials with a polar crystal structure that show magnetic properties have applications in laser technology, access memory elements, energy conversion, and spintronics. However, it is challenging to design such materials. In this project, a series of novel polar materials were designed by introducing the disorder of transition metal ions into nonpolar parent compounds. Phase-pure samples were prepared using the high-temperature solid-state method. The polar crystal structure was determined by powder X-ray and neutron diffraction, and transmission electron microscopy. The chemical composition of the prepared compounds was confirmed by scanning electron microscopy and energy-dispersive X-ray spectroscopy. The magnetic properties, resistivity, magnetoresistivity, and Hall effect of prepared compounds will also be presented.

Morin, Chloé

Institution: ***MN - University of Minnesota - Rochester***

Discipline: Nursing/Health Science

Author/Contributors:
Chloé Morin *Chinwe Cynthia Obi* *Brittany Brown*,
Rachel Olson *Amanda Nigon-Crowley*

Abstract Name: Course-Based Undergraduate Research and Community Science with The Village Community Gardens

Inclusion of undergraduates in authentic research is an effective tool to bridge the gap between theoretical and practical aspects of biology and increase competency and interest in research careers. In an effort to increase student access and engagement to research we developed a course-based undergraduate research experience (CURE). In addition, we aim to develop a project that would foster a mutually beneficial collaboration with The Village Community Garden, a local nonprofit aimed at food sovereignty and the provision of land and resources for culturally relevant food growth. Here, we aim to foster a collaboration between our community partner, students, and faculty that would promote outreach, engagement, learning, and scholarship. Students will 1) compare microbial numbers in soils of Rochester MN community gardens, 2) investigate microbial antibiotic resistance contamination within the community gardens, and 3) investigate soil microbial species with and without soil inoculant. Laboratory techniques employed to determine soil microbial counts are foundational procedures that students will benefit from performing. Furthermore, microbial soil populations are influenced by numerous biotic and abiotic features; growers are interested in learning these results. We aim to contribute to the national surveillance of antibiotic resistance of soil-dwelling bacteria to tetracycline. In addition, the students will investigate soil microbial species for resistance to three other antimicrobial agents employed in agriculture. The gardens are subject to community-grower fertilizer applications and the planting of inoculated legumes may mitigate the surplus nitrogen. We aim to identify soil microbial species with and without soil inoculant using molecular techniques. This CURE will be implemented during the summer of 2023 within the microbiology course at the University of Minnesota Rochester. Here, we are presenting our pedagogical approach and preliminary results.

Morin, Mercedes

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Mercedes Morin,
Erin Giles

Abstract Name: **The Link Between Obesity and Post-Menopausal Breast Cancer**

Cancer is a leading cause of death and previous research has shown that obesity can increase the risk of cancer andcancer-related mortality. For breast cancer, studies have shown that obesity increases risk after menopause. The overall goal of the Giles lab is to better understand the link between breast cancer and obesity in different stages of life, and to determine how different lifestyle modifications (diet, exercise, etc) and medications could decrease risk.There are several methods used to understand these relationships, such as small animal models with breast cancer and various hormonal levels, nutrient tracers, and in vitro studies where cancer cells and adipose cells can be isolated and manipulated.Healthy lifestyles that emphasized physical activity, weight control, and anti-inflammatory practices have been shown to decrease cancer risk and we expect our results to reflect this information. One of the ongoing projects in the lab is aimed at understanding the mechanisms by which decreasing obesity-assocated inflammation with ibuprofen decreases cancer risk. Similarly, the lab is investigating how exercise may also decrease breast cancer risk and slow tumor progression. It is anticipated that a healthy lifestyle can be one of the most effective ways to decrease the risk of breast cancer. Medications such as ibuprofen may not be as effective because they react differently in each individuals' body.These results will increase our understating of how lifestyle changes can be significant; however, it is known that maintaining a healthy lifestyle is not always feasible for all individuals. We hope that results of the current study will help identify how diet and exercise decrease breast cancer risk. This knowledge will help us identify alternative methods that may be more feasible to attain in a shorter period of time, such as medications and treatments that can regulate hormones, weight, and tumor growth.

Morishita, Yuto

Institution: *AR - Arkansas State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Emilio Soriano Chavez,
Dilynn Strickland,
Yuto Morishita

Abstract Name: **String in Switch ? Usage Analysis and Maintainability**

The release of Java 7 in 2011 introduced the capability of using character sequences, hereby referred to as String objects, in switch expressions and their corresponding case statements. This String in Switch language feature allows producing readable and better-performing code when compared to commonly used alternatives like if-else statements, often nested and difficult to modify and maintain. As a consequence, code maintainability can be simplified by incorporating this feature into a project. Our research focuses on the usability analysis of this new language feature, with the goal of observing its usage over time across selected Java-based open source projects. In addition, we perform a comparative analysis between sample String in Switch statements and equivalent if-else expressions to discuss the maintainability of the code as it relates to the advantages of String in Switch. For analyzing a project, we perform a file expansion that generates revisions for every commit in the project's repository. Subsequently, we build Abstract Syntax Trees (ASTs), allowing us to identify the presence of String in Switch statements present in a target file. With this information, usage-over-time plots are derived, allowing us to observe the occurrence of String objects in switch expressions throughout a project's development history. Of the analyzed projects, our research shows that the String in Switch feature is not widely used, despite its capability of generating cleaner and readable code. We conclude that some of the analyzed projects may be mature, which reduces the need to rewrite functional code into equivalent String in Switch statements. These findings are useful not only for programming language designers in understanding the tendency to utilize new features, but also for instructors in teaching programming languages in a limited amount of time.

Morman, Abigail

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Abigail Morman,
Sonja Meiers

Abstract Name: **The processes of conducting a scoping review in the discipline of nursing among an international team**

Background and Purpose: Research is a significant aspect of developing any discipline, but within the discipline of nursing there are a variety of essential steps required to execute impactful research. Scoping reviews are used to survey many studies from a section of time or focus to determine the state of the science and apply findings to current practices. This study intends to describe the process of conducting a scoping review among an international nursing team.Method: The guiding scoping review for this study focused on what nursing actions were used during COVID-19 to connect patients and families, including communication methods, frequency of contact, differences amongst countries, or intervention length. An observation of the processes used by experienced international researchers was conducted through examining emails, meeting agendas and minutes of virtual meetings, and interactions within the software used to conduct the analysis during the process of the scoping review. Data were drawn from these observations and used to determine essential elements for conducting a scoping review by an international team in the discipline of nursing.Results: Results revealed steps that can be applied in planning future scoping reviews. Developing and implementing a scoping review protocol, regular communication between the team leader and team members, regular virtual meetings, maintenance of a common OneDrive site for document storage, and use of a designated scoping review software were essential to process effectiveness.Conclusion: Conducting a thorough scoping review requires a rigorous review of existing literature followed by meticulous data extraction. Collaboration as an international nursing research team in conducting a scoping review can be facilitated by using a specific protocol, designated leadership, and regular communication.

Moro, Nathalie

Institution: *OK - Cameron University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Nathalie Moro,
Elizabeth Nalley

Abstract Name: **SYNTHESIZING TETRAPHENYLPORPHRINS AND METALLOPORPHYRINS USING MICROWAVE AND ULTRASONIC REACTORS**

Introduction: Tetraphenylporphyrin (TPP) is a macrocyclic molecule found in biological compounds. TPP's UV-Vis spectrum ranges from 380-500 nanometers. Metalloporphyrins (MeP) are considered “bioinspired oxidation catalysts” and are synthesized from TPP and metal anhydrous salts. Therefore, hypothesizing that the UV-Vis spectrum of the MeP will be altered by the type of benzaldehyde (electron-donating and electron-withdrawing groups attached to the benzene ring) added to the TPP ligand during the MeP synthesis reaction.Methods: The project investigated solvent-free conditions, first with a silica gel support and then without it. The TPPs were produced in a Chemical Explorer Microwave (CEM) Reactor with a commercial 950W/1000W microwave oven. The conventional reflux method and an ultrasonic reactor were used to develop the MePs. TPPs were synthesized with substituted and unsubstituted benzaldehydes to investigate the effect of electron-donating and electron-withdrawing groups on the complex synthesis and the UV shift.Results: The UV-Vis spectra for each MeP confirmed the formation of complexes with p-block metals. The data displayed that the Tin MeP showed a red-shift UV-Vis spectrum (446 nm) compared to the initial TPP (417 nm). Complexation of Tin with the 4-chloroTPP displayed a maximum peak at 473 nm.Conclusion: This reaffirms that the electron-withdrawing benzaldehydes worked better than the electron-donating when added to the TPP. Thus, causing the UV-Vis spectra to have a red shift compared to the initial product.

Morozov, Egor

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Blayde Lecher,
Shawn Janvrin,
Paul Schierenbeck,
Egor Morozov

Abstract Name: Political Divide

The current climate in the US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What informaiton is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingness to accept otherswith different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political group discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Morris, Quintin

Institution: *MN - Gustavus Adolphus College*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Quintin Morris,
Angelina Hathty,
Austin Carter,
Ezekiel Sundberg

Abstract Name: Yoga As An Approach to Mental Recovery 48 Hours After an Intense Workout

Background: Along with physiological changes, knowledge about yoga and meditation strategies for post workout mental recovery has been investigated. Results show that it improves mental clarity and reduces stress and anxiety levels. Purpose: The purpose of this study is to examine the effects of a 30 min yoga session on mental recovery 48 hours after a high intensity workout. Hypothesis: We hypothesize that if a yoga session is done immediately after an intense workout, it will produce greater mental recovery compared to those who do not participate in the yoga session. Methods: Twenty undergraduate students will complete a 30 minute intense workout. Following the workout, the intervention group will complete a thirty minute yoga/meditation session. The control group will not do anything outside of their usual routine. Conclusion: If our results align with our hypothesis, individuals can incorporate yoga into their exercise routine to benefit overall mental health and recovery.

Morrison, Jordan

Institution: *NC - High Point University*

Discipline: Education

Author/Contributors:
Jordan Morrison,
Sarah Vaala

Abstract Name: **A New Dimension in Science Education: Augmented Reality as an Instructional Tool**

With the personal use of tablets and smart devices growing more popular at young ages, educators are looking for ways to capitalize on interest in technology to engage children with educational media and learning apps. Augmented reality (AR) is a growing technology field that enhances the real world with digital media anchored to the location and content. There is a gap in literature regarding efficacy of AR apps compared to more familiar media sources in teaching STEM content. In this quasi-experiment, children (ages 8 to 12) were given an opportunity to view a YouTube video and an AR app to learn about an animal at the Greensboro Science Center. Half of the children watched the video first and half used the AR first. They answered post-test questions and made a video about what they had learned. We hypothesized that they would retain and share more information from the second source of media because it was fresher in their memory. However, results showed a trend for students to learn more from the media than they viewed first, particularly regarding facts from the YouTube video. This finding suggests that there could be oversaturation of information when given too much media regarding one topic in a short amount of time. Our questionnaire also measured student and parent STEM identity and STEM value. There was a trend for students with higher STEM identities to learn more from the AR program (p=.059). When kids view themselves as a scientist, they are more likely to learn from new tools compared to their peers that do not view themselves as scientists, whereas there was no significant difference between STEM identity levels and YouTube score.

Mortell, Abigail

Institution: *KY - University of Kentucky*

Discipline: History

Author/Contributors:
Abigail Mortell

Abstract Name: **Dickinson College: How a Denominational Institution Provided Civic Education in the Early American Republic**

By the close of the Constitutional Convention in 1787, the United States'Founders understood that the republican government they created relied on participation from virtuous citizens to survive.Virtue, defined as one's willingness to sacrifice one's private interests for the good of the community, would be acquired through religion and education, both of which instructed citizens on the necessity of selflessness and the welfare of humanity. These citizens would not appear spontaneously, so the Founders believed deliberate instruction was needed to prepare Americans for citizenship, giving meaning to the concept of civic education. How this instruction was to be undertaken, and by whom, was the question. Amidst Jeffersonians' attempts to secularize education by limiting denominational involvement in schools, Benjamin Rush and John Dickinson, as founding administrators of Dickinson College in Carlisle, Pennsylvania, believed religion was an essential pillar of civic education.Animosity between Pennsylvania's Quakers and Scotch-Irish Presbyterians caused by Pontiac's War (1763-1766) and the rise of the Paxton Boys persisted through the 1780s and threatened civil and religious liberty in the republic. Believing their own amicable relationship was made possible by their liberal arts education, Rush, a Presbyterian, and Dickinson, a Quaker fellow traveler, wished to replicate the tolerance they extended one another by bringing collegiate learning to the Pennsylvania frontier. Dickinson's and Rush's collaboration modeled the desired relationship between Quakers and Presbyterians, and an examination of Dickinson College's founding principles—ecumenical administration and faculty, denominational association, and classical curriculum—will reveal how the institution's founders believed civic education could promote greater religious and civil harmony. By instilling common republican values, the geographically, politically, and religiously divided Pennsylvanians would be unified by their shared identity as citizens of the American republic.

Moseley, Aaron

Institution: ***KY - University of Kentucky***

Discipline: Physics/Astronomy

Author/Contributors:
Aaron Moseley,
Christopher Crawford

Abstract Name: Readout Software for the NOPTREX Experiment

The Neutron Optics Parity and Time Reversal Experiment (NOPTREX) is investigating violations of time-reversal symmetry in the hopes to explain the baryon asymmetry of the early universe. In pursuit of this, members of the NOPTREX collaboration are constructing an array of twenty-four sodium-iodide scintillation gamma detectors to measure n-gamma resonances in heavy nuclei. This system will produce a large amount of data in a matter of milliseconds, necessitating a high-speed data acquisition system to read the detectors' output and deliver the data in a usable format. A custom firmware for a CAEN digitizer has already been developed that implements a trapezoid filter and charge integration to ensure the energy of each pulse is recorded. But, the firmware is limited by the basic readout software provided with the digitizer and cannot generate the required file output. We have developed a custom readout software in C++ that reads out data from the digitizer's firmware and analyzes it in real time before recording it to a file in the ROOT format to take advantage of the high-performance computing software developed at CERN.

Moses, Avinash

Institution: ***IL - North Central College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Max Loh,
Mitchell Roitman,
Avinash Moses

Abstract Name: Ventral Tegmental Area Amylin Receptor Activation Does Not Alter Prefrontal Cortex Dopamine Activity

The World Health Organization (WHO) estimates 650 million adults worldwide suffer from obesity, and these numbers rapidly grow. Amylin, one promising drug to treat this condition, induces satiety to reduce food intake. Reduced dopamine (DA) signaling in the mesolimbic DA system by amylin receptor (AmyR) activation on DA neurons in the ventral tegmental area (VTA) likely contributes to amylin's anorectic effects. However, little is known about which downstream areas mediate these effects. Prefrontal Cortex (PFC) DA activity is likely altered by VTA amylin. We trained food-deprived rats for 10 days (10 sessions) to non-contingent, high-fat, and high-sugar pellets. We infused 0.4μg/100nL amylin or a vehicle into the VTA and used in-vivo fiber photometry to capture phasic medial PFC (mPFC) DA release during pellet retrieval. While mPFC DA activity during pellet drops is potentiated and latency to retrieval decreases over training days, VTA amylin infusion did not alter mPFC DA dynamics during the pellet retrieval task. Based on these findings, it is likely that PFC DA has a role in reward learning, specifically in learning the availability of reward, but not in producing amylin-induced hypophagia.

Mosey, Derek

Institution: *PA - Susquehanna University*

Discipline: History

Author/Contributors:
Derek Mosey

Abstract Name: **"We Are a Despised People": Moravian Identity in Mid-18th Century Pennsylvania**

Mid-eighteenth-century Pennsylvania had a diverse landscape of Protestant denominations, including the Unitas Fratrum, or the Moravian church. Historian Scott Paul Gordon has argued that the eighteenth-century Moravian church in Bethlehem, Pennsylvania kept its congregation small on purpose, despite a wave of religious revivalism that expanded other denominations. My paper takes this premise and asks why the Moravians chose to stay small. I argue that the Moravians had a closely guarded identity rooted in their three-hundred-year history of oppression in Europe and the demanding nature of their mission work in Pennsylvania, during which they traveled the frontier and lived in Native American towns. Moravian history and their difficult mission to the Native Americans formed an identity as a "despised people," who were disliked and distrusted by their neighbors and committed to dangerous itinerant work on the frontier. This identity as despised martyrs helps us understand why the Moravian church chose to stay small, in an environment primed for growth. I use Bethlehem diary entries, meeting minutes, and Moravian missionaries' accounts to explain the Moravians' strange behavior. I also use Lutheran missionary records from the eighteenth and nineteenth centuries to provide a normative case that shows how the Moravians differed from their Protestant contemporaries, and to further examine the difficulties of mission work on the frontier. While historians have often observed that the Moravians did not fit into the eighteenth-century Pennsylvania frontier's religious and cultural landscape, I draw out unique facets of Moravian identity, making their choice to live as misfits make more sense.

Mossor, Logan

Institution: *GA - Kennesaw State University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Logan Mossor

Abstract Name: **Measuring Perceptions of Creativity Through Collaborative Experience**

Many consider the world of visual art to be a strictly individualistic field; an individual sculptor sculpting or an individual painter painting. In fact, community and collaboration often aid the creativity of those working in the visual arts. Large scale artistic endeavors such as Yves Klein's "Anthropometries" and Christo and Jean Claude's "Running Fence" required many people all working towards one artistic vision. My own experience as a collaborative artist has indicated to me that the creative efforts of a group of people can often be more inspired than that of a single artist. Having staged many collaborative art pieces, I have become curious as to exactly what impact collaborative art has on its participants. To investigate my inquiry, I plan to stage an ongoing exploration of participants' creative evolution while making collaborative art. Over a six month period, I will stage and document a controlled collaborative environment in which subjects will participate in a shared artistic experience; expressive wall painting in a site specific setting. Before the experience, they will complete a questionnaire to determine their own perceptions of creativity. After participating in the collaboration, the subjects will receive a post-survey of the same questions. The surveys will be written acknowledging Rita Irwin's essay "Communities of A/r/tographic Practice" and Allan Kaprow's essay "Manifesto." Using the pre and post surveys, I will track the subjects' creative growth after each collaborative experience. These results will determine how collaboration in the visual arts impacts creativity. Further outcomes may demonstrate how this creative evolution is mutually beneficial to both the facilitators and the participants of a collaboration. This valuable data will inform my future creative endeavors, and further establish the significance of collaborative art in the visual arts community.

Motamedi, Cicely

Institution: *VA - George Mason University*

Discipline: Physics/Astronomy

Author/Contributors:
Karen Sauer,
Cicely Motamedi

Abstract Name: **Determining the Direction of Magnetic Fields Using Optically Pumped Atomic Magnetometers**

An optically pumped atomic magnetometer (OPAM) detects magnetic fields within a two-dimensional plane. Previously, radio frequency magnetometers could not be used to determine the exact direction of the field within the plane. In this experiment, two magnetometers were used to determine the direction of test signals created by running current through coils of wire. In an OPAM, alkali atoms are made to rotate around an applied static magnetic field. Only components of a magnetic field that rotate in the same sense and at the same frequency as the atoms are detected by the OPAM. The magnetic fields used in this experiment had directions that either alternated linearly or rotated. Since an alternating magnetic field is equivalent to the sum of two oppositely rotating components, a magnetometer detects only the component that rotates in the same sense as the atoms. This experiment used two magnetometers with their applied fields equal and opposite to each other to separately detect both of the rotating components. The directions of the test signals were then determined from the measurements of the two rotating components. Knowing the direction of the detected magnetic field would be useful in applications where noise from radio interference is known to be perpendicular to the signal. In this case, the direction could be used to distinguish between the signal and interference. One such application is the detection of landmines.

Mottershead, Adam

Institution: *NC - Western Carolina University*

Discipline: Economics

Author/Contributors:
Adam Mottershead,
Sean Mulholland

Abstract Name: **The Stream Mitigation Market and its Effect on Water Quality**

Developers often desire to relocate or channelize streams when building new structures. To allow development and prevent net loss and degradation of streams, states, followed by the Federal Government, designed stream restoration credits, banking, and exchange markets. By restoring nearby streams in a specified manner, the process allows firms to obtain, bank, and trade restoration credits within each HUC 8 watershed (an area where all the water flows into) to offset the streams degraded by developers. Restoration credits can be thought of as a tool used by a third party to sell the rights of a nearby stream that they restored to developers. Once developers purchase said credits, they can begin degradation of the onsite stream as the loss has been mitigated. While the primary metric of successful stream restoration is on hydrologic and geologic stability, water quality is an equally important metric that is rarely used when assessing stream health and granting restoration credits. Regulators often attempt to indirectly address the issue of stream water quality inequivalence between natural streams and restored streams through trading ratios. For example, if 100 acres of natural stream system is degraded by development, 300 acres of restored stream is needed to remain compliant. This would be considered a 3:1 trading ratio. However, these trading ratiopolicies mean that the government agencies in charge of credit enforcing and approval rarely acutally measure water quality and biological stream health post-restoration and trade. Using data on all mitigation sites in the United States, their respective credits per site, and United States Geological Surveyor (USGS) water quality data at the HUC 8 watershed level, we seek to determine if the current mitigation bank policy has improved water quality, remained neutral, or decreased water quality on the HUC 8 watershed scale.

Moussa, AAbdellah

Institution: *OK - University of Central Oklahoma*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Jeffrey Moore

Abstract Name: **Kendo_Fighter_Trainer**

The first computer controller machine for Kendo self-training was invented in 2005 by Prof Young-Bong. Bang from the Manufacturing and Mechatronics Lab of Seoul National University in South Korea. The Japanese kendo fighting robot, known as MUSA, weighed 150 pounds, and was 65 inches tall with a central processing unit that employs several sensors and digital cameras for tracking opponent's motion and assist in counterstrikes. Despite the accuracy and strength of counterattack maneuvers, the response time of the Kendo fighting companion was relatively slow mostly because of the insufficient speed of its processing unit, and the limited mobility of its motion transmission mechanisms. Several design upgrades were made to improve its mobility at a marketable price. Unfortunately, to our knowledge, an affordable self-training Kendo fighting companion is yet to be developed and manufactured, which bring us to the subject of our current investigation. In our ongoing project, we reinvented the original kendo companion blueprint and designed a lightweight self-training arm that is capable of reproducing Kendo attack and defense maneuvers. For improved mobility, the kendo-Arm is driven by a set of spherical and monopolar gears housed in a ball and socket joint. The spherical motor concept was first developed in 2021 by researchers Kazuki Abe, Kenjiro Tadakuma and Riichiro Tadakuma from the Yamagata University, Yamagata Japan and Tohoku University, Miyagi Japan. An improved version of this concept will use a Raspberry Pi single board computer to repeatedly processes several digital camera images of a color labeled arm from the computer. Then it will transmit motion coordinates to an imbedded driving mechanism that employs DC geared motors and Arduino controllers. The driving mechanism carefully adjusts the rotation and precession of the monopolar gears for precise and reliable counter strikes.

Moyer, Katelyn

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
Alyssa Horton *Thomas Atwood* *Natalie Hanson*
Katelyn Moyer *Nicholas Beltz* *Saori Braun*
Jeffrey Janot

Abstract Name: **The Cardiorespiratory Response while Nordic Walking vs. Regular Walking Among Middle-Aged to Older Adults**

Background/Purpose: Around 60-80% of waking hours for adults are spent in sedentary behavior while physical inactivity accounts for 9% of all deaths worldwide. Furthermore, there is a strong dose-response relationship between physical inactivity and all-cause mortality, cardiovascular health, and metabolic health. Recently, Nordic walking (NW) has been introduced as a superior mode of exercise where one can increase energy expenditure due to increased engagement of upper body musculature while walking at a moderate intensity pace. NW is like regular walking except for using walking poles. Within established findings, most work has been done in a laboratory which can interrupt natural NW mechanics. Therefore, the purpose of this study was to measure the cardiorespiratory and energy expenditure differences in Nordic walking and regular walking in a field setting. Methods: Twenty middle-aged and older adults participated in this study. Each participant's initial session included Nordic walking familiarization, 10-m gait speed test, and a peak oxygen uptake (VO2peak) test. The two exercise sessions consisted of either NW or regular walking on an indoor track for 30 minutes. All metabolic variables were measured via the COSMED K5. Results: A paired-sample t-test revealed a significant difference between NW and regular walking for %VO2peak values ($p = .008$), kcal·min-1 ($p = .005$), and total kcal expenditure ($p = .001$). No significant difference was found for preferred gait speed ($p = .485$) between NW and regular walking. Conclusion: NW is superior to regular walking in eliciting a higher %VO2peak despite similar walking speeds, a higher kcal·min-1, and greater total kcal expenditure. In turn, these data agree with previous research and supports the use of NW to increase energy expenditure to potentially prevent the risk of one's metabolic and cardiovascular risk.

Mozaffari, Fatemeh

Institution: *MI - Wayne State University*

Discipline: Physics/Astronomy

Author/Contributors:
Fatemeh Mozaffari

Abstract Name: **Synthesis of Yttrium Iron Garnet Thin Films on Gadolinium Gallium Garnet Substrate**

In thin films, Yttrium Iron Garnet (YIG) can be considered the most prominent material in spin dynamics due to its ultra-low damping. This ongoing project aims to synthesize a high-quality thin film of YIG on Gadolinium Gallium Garnet (GGG). Due to their lattice match, GGG is considered an ideal substrate for YIG. The sample was developed using a set of parameters inspired by previously published works. The production of YIG includes deposition and annealing processes. For the deposition, a DCmagnetron with RF with a base pressure of 10 mTorr and sputtering power of 75 W was utilized. The sample was then annealed in a tube furnace with constant oxygen flow overnight. In the following week, we plan to measure the thickness and surface roughness of the sampleusing Atomic Force Microscopy (AFM). Additionally, we plan to examine the sample's magnetic property using a magnetometer to confirm the sample's quality. Since our recipe follows other published works closely, our measurements are expected to be close to existing results in related studies. We expect our measurementto yield an approximate thickness between 20 to 40 nm. However, the results of the surface roughness and magnetization measurements are more challenging to predict.

Mozelewski, Katherine

Institution: *PA - Westminster College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Katherine Mozelewski,
Deanne Buffalari

Abstract Name: **Sex differences in the interactions of nicotine and food deprivation on anxiety-like behavior**

Cigarette use is highly associated with weight loss, and many people begin smoking to lose weight. As such, calorie-restrictive diets are often used in conjunction with smoking, particularly in women. Yet, the interaction of nicotine and food deprivation in males and females is not fully understood. This study aims to analyze the impact that sex and calorie restriction may have on the body's response to nicotine through the observation of anxiety-associated behaviors in rodent animal models. Food-deprived female rodents exposed to nicotine are expected to present fewer anxiety-associated behaviors than free-feeding female rodents and all male rodents. If our hypothesis is supported by the results, this will indicate that women who diet and use nicotine may experience less anxiety than non-dieting females and males. This may result in a more pleasurable smoking experience for female smokers and decreased rates of nicotine cessation. Due to the abundance of negative health effects of nicotine, this makes dieting and smoking more hazardous to women's health than simply smoking alone.

Mrowicki, Cody

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cody Mrowicki,
Allen Kaplan,
Evan Schepp,
Rhys Love

Abstract Name: **The Mesoscale Conditions that Contributed to the development of the Morton, Texas Tornado on 23 May 2022**

On 23 May 2022, the participants of UW-Whitewater's Field Course on the Forecasting and Verification of Extreme Weather witnessed a tornado in west Texas. The official tornado report had tornado genesis occurring at approximately 0007 UTC 24 May 2022 (7:07 pm CST 23 May 2022). Based on synoptic-scale (i.e., large scale) conditions most of west Texas from the US-Mexico border into the Texas panhandle were under the threat of severe weather on this day. While in the field and in the post-mortem analysis of this day it was determined the mesoscale conditions were the main factor as to why a significant tornado occurred in the west Texas region near Morton. Mesoscale conditions were evident during the course's morning weather briefing using various mesoscale forecast models. As the day progressed and conditions changed slightly, adjustments were made by the course participants that allowed them to witness the development of the thunderstorm that would end up producing a dust storm (with straight-line wind gust up to 80 mph) and large hail (1.5 – 2.5 inches in diameter). In the post-mortem analysis, a detailed analysis of the mesoscale conditions was performed with additional data from mesoscale networks around the west Texas region. This post-event analysis did find that a localized area of enhanced shear formed near the Morton area due to a surge of dry air out of eastern New Mexico. Preliminary results show that this surge of dry air interacted with an outflow boundary from the earlier developing thunderstorms. The interaction of these differing boundaries created a small area of enhanced lift and wind shear that allowed one of the on-going thunderstorms to intensify and produce an EF2 tornado that occurred 7 miles north of Morton, which the course participants witnessed.

Mtenga, Mrina

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Mathematics

Author/Contributors:
Mrina Mtenga

Abstract Name: **Mathematical Modeling of Polio with Emphasis on Vaccination Strategies**

Poliomyelitis is an infectious viral disease that affects the central nervous system leading to permanent or temporary paralysis. Like other infectious diseases, the spread of the disease in a population with a known size structure can be analyzed and represented using a mathematical model. In this paper, we use a Susceptible-Infected-Removed (SIR) model to study the rate of the spread of polio between the susceptible, infected, and removed individuals who are immune to the pathogen in a population sufficiently large enough. There are two types of vaccinations for Poliomyelitis available which are live Oral Polio Vaccine (OPV) and Inactivated Polio Vaccine (IPV). We investigated different vaccination strategies toward the goal of eradicating Poliomyelitis. A computational study will be shown to illustrate the dynamics of the various scenarios of polio virus transmission and the effectiveness of vaccination strategies in combating polio.

Muca, Oltjona

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Oltjona Muca *Jihee Kim* *Omar Ghandour*
Analía Dall'Asén

Abstract Name: **Exploring the Raman Scattering Response of Meteoritic Fragments**

Raman spectroscopy is a technique that has been used extensively on different kind of samples (carbon allotropes, semiconductors, polymers, microplastic particles, microorganisms, cells, etc.) since it is a nondestructive tool that provides information about their structure and material composition. In particular, it has been employed on meteoritic samples which in general are mainly composed of micro/millimeter sized inclusions, surrounded by a matrix of microparticles, that date from around the time of the formation of our solar system. The study of the physical properties of these relics using Raman spectroscopy can help to understand how planets formed since they can give evidence of the conditions (e.g., thermal, temporal and barometric) in which the materials found in the meteoritic samples developed in our solar system. However, not all the constituents of meteoritic samples have a Raman signal with a high signal-to-noise ratio, or other phenomena present in those materials (e.g., fluorescence) can hide some Raman features. In this work, we examine several meteoritic fragments that have recently been acquired by our group, such as carbonaceous chondrites Northwest Africa (NWA) 7184 and Aguas Zarcas, using this experimental technique. We explore the surface of these samples carrying out Raman spectroscopy measurements on numerous inclusions and surrounding matrix to find materials with high signal-to-noise ratios to analyze the mineralogical composition of the fragments. We correlate these results with other experimental techniques (e.g., optical microscopy, scanning electron microscopy, energy dispersive X-ray spectroscopy and/or atomic force microscopy) to look for signatures of the physical processes that drove the formation of these meteorites.

Mudda, Ojasvi

Institution: *CA - Aspiring Scholars Directed Research Program*

Discipline: **Biology**

Author/Contributors:
Ojasvi Mudda,
Aksithi Eswaran

Abstract Name: **In-silico Characterization of Potential SRF Inhibitors in HCT116 Colorectal Cancer**

SRF (Serum Response Factor) is a transcription factor that is activated by growth factor stimulation and mitosis, leading to the expression of genes that influence growth and the cytoskeleton. Additionally, HOPX, which is associated with reduced cell proliferation and tumor suppression, inhibits the binding of SRF to DNA. Additionally, SRF in gastric cancer is associated with an aggressive phenotype and a poor outcome due to the downregulation of E-cadherin which promotes the epithelial-mesenchymal transition. Furthermore, in colorectal cancer, SRF is overexpressed in metastatic tissues, leading to increased cell motility and invasiveness. Based on this, we decided to look for potential SRF inhibitors. We are currently working with chemical similarity algorithms and clustering techniques, like Tanimoto similarity and UMAP, to determine SRF inhibitor candidates based on limited existing inhibitors. Those candidates will then be docked to the target using Autodock Vina. Molecules with high binding affinities will be tested for drug-induced liver injury (DILI) and toxicity in cells (DeepCDR). Furthermore AutoGrow, an open-source program which uses a genetic algorithm to 'evolve' known ligands based on binding affinity to the target, will be used for de-novo drug design. Preliminary results reveal several inhibitors with better binding affinities than our positive controls from the ChemBL dataset along with preliminary drugs from Autogrow with even better binding affinities. We anticipate that these drugs will eventually be tested in-vitro on colorectal cancer cell models, such as the HCT116 cancer cell line.

Mudium, Nikhita

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Nikhita Mudium *Woong-jai Won* *Ashley Harms*, *David Standaert*

Abstract Name: **Characterization of Immune Cell Pathology in Corynebacterium amycolatum Gut Microbiome in the Thy1-SNCA Parkinson's Disease Mouse Model**

Parkinson's Disease (PD) is a neurodegenerative movement disorder that is characterized by tremors, rigidity, and unsteady gait. Symptoms are caused by the degeneration of neurons in the substantianigra of the basal ganglia, an area of the brain that initiates movement, due to abnormal accumulation of the misfolded alpha-synuclein protein.Prior to motor symptoms, PD patients often have preclinical symptoms, such as constipation and anosmia. Recent research suggests that the gut microbiome is important in this early pathology of PD via modulating neuroinflammation, a key mechanism of neurodegeneration. A recent study identified Corynebacterium amycolatum, a pathogenic microbial species, as disproportionately present in the gut of human PD patients, but how or if the pathogenic species contributes to pathogenesis is unknown. We hypothesized that Corynebacterium amycolatum will increase neuroinflammation and enhance Parkinsonian symptoms. For this study, we used Germ-Free transgenic alpha-synuclein overexpressing mice. The mice, along with non-transgenic controls, either received or did not receive a C. amycolatum transplant. 1-month and 6-months post-transfer, brain tissues were immunolabeled with pSer-129, a misfolded alpha-synuclein marker, as well as GFAP and IBA-1, markers for the neuroinflammatory cells astrocytes and microglia, respectively, through immunohistochemistry.The tissues werevisualized using light microscopy and quantified with ImageJ. After 1-month, transgenic C. amycolatumtransplant mice exhibited an increasing trend of greater astrogliosis and alteration of microglial activation morphology in the cerebral cortex compared to non-transplant mice. This trend continued in the 6-month mice but was accompanied by a decrease in pSer-129 in the striatum. Therefore, our study provides intriguing evidence of glial changes due to the presence of C. amycolatum and suggests an early protective role in the onset of PD of the microbial species. Since the gut microbiome can be easily modified, C. amycolatum may be utilized to create a therapeutic microbiome for PD.

Mueller, Abby

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Abby Mueller,
Amber Smith,
Cece Giesen,
Ben Schutt,
Hayden Walkush,
William Watry,
Alayna Reynolds,
Cady Sartini

Abstract Name: **Home Range and Habitat Selection of Rehabilitated and Released Female Black Bears in Northern Wisconsin**

The Eastern American Black Bear (Ursus americanus americanus) is a valued species among many for its biological, intrinsic, and cultural significance. Black bears are considered habitat generalists, taking advantage of the resources available to them. In the state of Wisconsin, previous studies suggest black bears select for habitats in northern hardwood forests and near beaver flowages. Habitat selection data from rehabilitated and released bears is lacking in Wisconsin, although this is a practiced management technique. The purpose of our study is to investigate the home range and habitat selection of rehabilitated and released female black bears in northern Wisconsin. The rehabilitated yearlings are fixed with GPS radio-collars prior to release, and location data is received every four hours. Habitat data from the received GPS points are compared to habitat data from random locations within the bears' home range (third-order analysis). Habitat data such as landcover type and distance to nearest road, stream, and open water source is collected. Understanding habitat selection of rehabilitated black bears in comparison to previously known black bear selection behavior is important for determining the impacts of rehabilitation and release as a management technique.

Muhidin, Farhiya

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Psychology/Neuroscience

Author/Contributors:
Harrison Thiry *Farhiya Muhidin* *Cleo Opoku-Owusu*
DeNae Bube *Megan Dobner* *Brooke Bayerl*
Riley Kangas

Abstract Name: Inversion of In-Group Favoritism in Adversarial Conditions

Introduction: In-group favoritism (Sumner, 1906; Taijfel & Turner, 1986) is the phenomenon of giving preferential treatment towards individuals within the same perceived social group (e.g., age, race, gender).
Purpose: To experimentally assess whether in-group effects will negate and even invert when one party exhibits actions / demands that exceed the boundaries of a normal in-group association.
Procedure: See Appendix. We created a workplace scenario where the participant assumes the role of a co-worker. In the first segment, the participant is assigned to work with Mary, who requests some minor favors (baseline condition), and responds to the five assessment items shown in the Appendix. In the second segment, Brittany joins the workgroup, and does things that should go beyond in-group boundaries (inversion condition), and then the participant responds to the same five items.
Hypotheses: (1) sum of the five ratings will be significantly lower in the inversion (I) condition relative to the baseline (B); (2) participants who are around the same age as the scenario models will show a stronger inversion difference relative to those who are not; (3) because of its nurturing facets, the Big Five trait agreeableness will moderate the effect such that more agreeable participants will be less affected by the inversion effect.
Participants: 63 total from convenience and classroom samples, age ranging from 16 to 62.Results:Hypothesis 1: Baseline (mean=17.4, sd=3.0), Inversion (mean=10.8, sd=3.3), t=14.82 (p<.00001)Hypothesis 2: Same age (B-I mean=3.94, sd=3.6), different age (5.1 / 2.9), t=2.09 Hypothesis 3: Correlation Agreeableness vs B-I difference r = -.24 (p<.05)Discussion: H1 was supported, H2 was significant but in the wrong direction (non-matching aged participants showed a larger inversion effect), H3 was supported (more agreeable, smaller B-I difference). Follow-up research suggested for H2.

Mulder, Diana

Institution: ***IA - Iowa State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Diana Mulder,
Lina Rodriguez-Salamanca,
Leonor Leandro

Abstract Name: Verification of a qPCR Assay for Detection of Phialophora gregata in varied Soybean Tissues and Brown Stem Rot suspect samples

Phialophora gregatais the causal agent of the disease Brown Stem Rot of soybean. As a common pathogen found in fields across the Midwest, it is important that extension services provided by land-grant universities, like the Plant; Insect Diagnostic Clinic at Iowa State University, have effective methods of detecting and diagnosing the disease so proper management practices may be implemented.P. gregatagrows slowly in culture and is difficult to isolate from infected tissues with media, which creates a need for a rapid yet accurate detection method. An article published by Malvick et al. 2007 titled "Detection and Quantification of Phialophora gregata in Soybean and Soil Samples with a Quantitative, Real-Time PCR Assay" presents a promising detection strategy that uses quantitative polymerase chain reaction (qPCR) to detect and quantifyP. gregatawithin a plant sample. This article is the first qPCR assay forP. gregataever published, which demands the need to evaluate the materials and methods used in the assay to verify the procedure. The reproducibility of Malvick et al. 2007's detection method was tested to examine its effectiveness as a diagnostic tool by determining whether the method could detect the pathogen at various concentrations within soybean plants of varying conditions. The project was conducted by planting soybean seeds in soil inoculated with the pathogen, harvesting plant tissue at various plant growth stages, extracting DNA from different categories of plant tissue, and executing a series of qPCR reactions using the reagents outlined within the publication. We found that the qPCR assay recorded by Malvick et al. 2007 successfully detected and quantifiedP. gregataDNA in soybean plant tissue of varying conditions.

Muller, Greta

Institution: *TN - Middle Tennessee State University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Greta Muller

Abstract Name: **Pionír: An Illustrated Novella Inspired by the Historical Pioneering Heritage of a Family from Transylvania**

The creative thesis Pionír developed an illustrated novella inspired by accounts told to the author, Gréti Müller, by older generations of her family who lived under the Romanian communist regime and witnessed its overthrow in 1989. The title of the novella, "pionír" /ˌpaɪəˈnɪəɹ /—the Hungarian term for the English word "pioneer"— is meant to capture a central theme in the history of the author's family, a motif reappearing throughout generations and enacted again in the 21st century in a pioneering move to the United States. Pionír was written to acknowledge and honor the individuals on whom the characters of the narrative are shaped. Their story of struggle, pioneering, overcoming, changing, growing, and moving forward can also hopefully bring richness and depth to the stories that comprise the immigrant heritage of the United States.The work Pionír found its current expression through envelopes sewn together to form an artist's book. Each envelope holds a chapter of the narrative along with works of art that reference parts of the storyline. At the expense of the aesthtetics of traditional illustration, the artistic component of Pionír is meant to engage the five senses of the "reader," and to translate synesthesia into a form of art.Through a narrative inspired by history and through the immediate experience of it as a work of art, Pionír tells a story that becomes an invitation open to everyone. The "reader" is called to make sense of it by relating the work to his/her life and cultural-historical heritage.

Mullins, Emma

Institution: *NC - North Carolina State University*

Discipline: Earth & Environmental Sciences

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Angela Allen,
Chase McCrary,
Emma Mullins,
Jada West,
Mindy Dunn

Abstract Name: **Continuous Compliance Monitoring of Water Quality to Determine the Effects of Urbanization on Richland Creek**

This project aims to establish a long-term water quality compliance monitoring system to determine the degree to which urbanization is impacting physical and chemical indicators crucial to the health of Richland Creek and Schenck Forest. Continuous monitoring allows us to observe the changes in these indicators as commercial, residential, and transportation development expand in the surrounding area. The area of study consisted of two sites situated along Richland Creek, located in Raleigh, North Carolina, where biweekly YSI and nutrient testing were conducted. The sites' data were compared to observe two trends: (1) the initial contrasts stemming from their different existing degrees of urbanization, and (2) the changes in these contrasts due to their differing rates of increasing urbanization. Our goal is to influence city and community programs in Schenck Forest to protect water resources for the people who consume them and the ecosystems that depend on them. We hope this research can help establish a baseline for these indicators to inform future research around water quality, aquatic life, and human health in Richland Creek and the field as a whole.

Multhauf, Sara

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Blake Vander Weide *Lucas Williams* *Sara Multhauf*
Sean Jordan

Abstract Name: **EFFECTS OF ATYPICAL ANTIPSYCHOTICS IN RATS TRAINED TO DISCRIMINATE BETWEEN 22 AND 2 HOURS FOOD DEPRIVATION**

In humans, weight gain is a side effect of atypical antipsychotics. In rats, clozapine increases eating, but reduces food-related, operant behaviors. Ziprasidone has smaller or no effects on eating in rats. Given the short half-life of clozapine in rats, we tested the effects of acutely administered clozapine and ziprasidone on the discriminative stimulus effects of food deprivation. Male, Sprague-Dawley rats were trained to discriminate between 22 and 2 hrs(hours) of food deprivation in a two-lever operant task. Under 22 hrs deprivation, left lever presses were reinforced by a 45 mg food pellet. Right lever presses were punished with 8 seconds of darkness. Under 2 hrs deprivation conditions, the contingencies were reversed. Training sessions lasted until 10 reinforcers were earned or 15 minutes elapsed. Training continued until rats emitted 80% or greater condition appropriate responding before the first reinforcer was earned for 8 out of 10 sessions. After acquiring the discrimination (M = 71, SEM = 6 sessions), subjects were food deprived for 2 or 22 hrs and injected subcutaneously with either clozapine (1.0-5.6 mg/kg), ziprasidone (0.32-1.0 mg/kg) or vehicle (1.0 ml/kg). For the 5 minute or 5 reinforcer test sessions, responses toward either lever were reinforced under the FR 15. Test trials were conducted every 15 min for 2 hrs. After test session, food intake was recorded for 1 hour. Clozapine and ziprasidone did not induce hunger-like responses under 2 hrs deprivation. After 22 hrs food deprivation, clozapine (1.0-5.6 mg/kg) significantly reduced hunger-like stimuli induced by 22 hr deprivation, whereas ziprasidone had no effect. Under both deprivation conditions, clozapine decreased food intake, but ziprasidone did not. These data indicate clozapine decreases feeding-related behaviors in rats. Atypical antipsychotic medications have different effects on food-related behaviors in rats and humans

Muniz, Lisette

Institution: ***CA - University of California - Merced***

Discipline: **Public Health**

Author/Contributors:
Lisette Muñiz,
Paul Brown

Abstract Name: **Farmworker Health Study (FWHS): Language Barriers in Utilizing Health Care Among Farmworkers in California**

For farmworkers to access healthcare, it must be affordable, readily available, and delivered in a manner that is appropriate to their needs and culture. This project examines the extent to which farmworkers report facing language barriers when accessing healthcare, and the issues that healthcare providers face when providing translation services to farmworkers and their families. This mixed method study combined information from the recently completed Farmworker Health Study (n=1199), the largest study regarding farm workers in California, with qualitative data from interviews with healthcare providers. Results from the quantitative analysis were examined based on the various California regions from the FWHS. The results from a search of the literature and the interviews with healthcare providers identified a number of barriers and facilitators that farmworkers face, including language proficiency and the need for appropriate translations. Taken together, these results put forward an introduction to current language barriers among farmworkers and the healthcare providers who assist these individuals.

Munoz, Alayna

Institution: *PA - York College of Pennsylvania*

Discipline: Sociology

Author/Contributors:
Alayna Munoz

Abstract Name: **The Impact of Covid-19 on Services Supporting People with Intellectual and Developmental Disabilities**

Covid-19 had devastating impacts on millions of people throughout the world, especially for underprivileged populations such as those with disabilities. People with intellectual and developmental disabilities (IDD) are at greater risk of both contracting and becoming severely ill or dying from Covid-19. Services supporting people with IDD work with a medically vulnerable population, especially during the Covid-19 pandemic. The increased risk and needs of this population are key considerations when it comes to modifying operations and other decisions within an organization. These organizations had to quickly adapt in order to serve the needs of their clients and employees. Existing issues, like the workforce shortage, were exacerbated by the Covid-19 pandemic; Meanwhile, new issues arose, like frequently changing regulatory policies. Providers had to be responsive when faced with limited resources, high staff turnover, and new regulations. Organizations explored alternative methods of service delivery when their regular operations were forced to cease. In many cases, this meant a transition from in-person activities to using a virtual platform. When IDD service providers encountered a number of challenges presented by the Covid-19 pandemic, organization leaders had to decide what strategies to implement in order to continue serving their clients. This study aims to find the relationship between factors that have affected IDD service organizations during the pandemic. Using 11 in-depth interviews with leaders of organizations that support individuals with IDD, six main areas of impact were identified and analyzed using Integrative Structural Modeling (ISM). The six major themes analyzed were staff recruitment and retention, accessing medical resources, the special needs of the service population, utilizing technology, implementing public policy changes, and leadership practices. Note: This project is currently in the analysis phase. It is expected to be completed by February 2023.

Munoz, Robby

Institution: *IA - Wartburg College*

Discipline: Biology

Author/Contributors:
Roberto Munoz,
George Weiner,
Travis Fischer,
Caitlin Lemke-Miltner,
Sue E Blackwell

Abstract Name: **Vidutolimod uptake by leukocytes: elucidating the role of granulocytes & the impact on their activation**

Many types of cancer are difficult to treat due to the body's ineffective immune response to the tumors. Using immunotherapy, we can activate the body's immune cells to kill tumor cells. Vidutolimod (VIDU) is a novel immunostimulatory drug for treating cancer. It is a virus-like particle with a TLR-9 agonist delivered in situ. It is currently in preclinical studies, and in clinical trials. Research focus has been on T-cells, B-cells, and plasmacytoid dendritic cells (pDCs). VIDU has shown to activate pDCs which eventually activates an anti-tumorigenic response through NK cells, and t-cells. Neutrophils although being the most prominent leukocyte, have not been studied with relation to VIDU. The purpose of this study was to isolate the neutrophils, then treat with VIDU, and anti-Qßin two dosages. The cells were analyzed in the flow cytometer. Twenty-four-hour supernatant of the cells was analyzed using a 27-plex ELISA. The results showed very effective uptake of VIDU by neutrophils. Improved uptake of VIDU was observed with the addition of anti-Qßantibody which scaled with increased dosage. ELISA data showed no upregulation of any neutrophil cytokine/chemokines except for IL-8. Sample methods such as the PBL, which have more neutrophils than the PBMC layer, showed less effective production of IFN-αby pDCs; which is essential for the anti-tumor response. The effects of VIDU on the immune cells are better understood after this preliminary data on neutrophil-VIDU interactions. However, there is need for more research in understanding the immunological interactions leading to anti-tumorigenic effects using VIDU.

Munoz Ordonez, Nicole

Institution: *MA - Bridgewater State University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Lucy Alimamy,
Ana Murphy,
Nicole Munoz Ordonez

Abstract Name: **Perception of Social and Physical Environmental Risk Factors Affecting Women Experiencing Homelessness: A Mixed Method Study**

Homeless people in general confront many difficulties that make their lives very challenging. However, when it comes to women experiencing homelessness, those challenges can threaten their own well-being by increasing the risk of victimization and decreasing the levels of personal safety. This research project has three aims: first, to better understand the link between victimization and social and physical environment as it relates to homeless women; second, to recognize which aspects of the social and physical environment homeless women find threatening and difficult to overcome; and third, to examine the areas of conflict within the coexistence of homeless women in a mixed-gender transitional shelter. This study is based on a mixed-method approach. The data are drawn from fivein-depth interviews and from secondary survey data collected by Ozanam Manor, a faith-based agency. The qualitative analysis uses a naturalistic perspective to study homeless women in their own living settings in a transitional shelter and provides a rich, contextualized understanding of homeless women's perception of risk. We also analyze secondary survey data collected by Ozanam Manor and use correlation analyses to understand the relationship between social environments and respondents' safety perceptions.Our research goes a step further by assisting Ozanam Manor in identifying and comprehending areas for improvements, such as security and staffing, in order to better accommodate and meet the needs of the individuals of their institution, as communicated by the women in our study.

Munter, Jacob

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Psychology/Neuroscience

Author/Contributors:
Dijana Mitrovic,
Jacob Munter,
Hannah Collier

Abstract Name: **Parent-child weight-related conversations and body image development: Investigating the moderating effects of the parent-child relationship**

The current research question explores how parent-child relationships can contribute to the effects of conversation about diet or weight on adolescent body image. Past research has shown the negative effects of mothers encouraging daughter's weight loss or dieting is buffered by mother's conversations about her own weight or diet. One possible explanation for this is that these bi-directional conversations are happening in a close, more cohesive relational context between mothers and daughters. This research uses a survey design to measure responses from participants on current relationship with parents (e.g., perceived mutuality, cohesion, parent-adolescent attachment), parent-child conversations about weight and diet, body image and disordered eating outcomes. Data in this study was collected from psychology students at the University of Wisconsin-Parkside, who responded to survey questionnaires via qualtrics. We predict that the stronger the parent-child relationship, the less negative impact conversations about body image and diet will have on adolescent body image and disordered eating. This research can help show the major effects of parent contributions to adolescent's perspective on diet and weight, in addition to highlighting key issues that could influence the impact of these types of conversation. With the growing amount of individuals experiencing low self-esteem due to poor body image and weight concerns, this research question is an important topic in today's society. Answering this research question will aid in understanding the effects of parent-child relationships on adolescent body image and disordered eating concerns.

Murikipudi, Manohar

Institution: *GA - Kennesaw State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jaterien Walker,
Manohar Murikipudi,
Ibrahima Gueye

Abstract Name: **Vicon sensed Post-stroke rehabilitation exercise assessment using Attention-based CNN**

Cardiovascular diseases are one of the concerning problems in the United States. According to CDC, approximately 805,000 people suffer heart-related problems every year, out of which 605,000 are the first time. Physicians suggest rehabilitation exercises to the surviving patients as these exercises will help the patients in bringing back their physical function and mobility before the injury. Due to recent technology amelioration, many are using Motion Capture Systems to perform the suggested movements. To improve the performance of these sensors, we develop a model that concentrates only on dominant parameters skipping the rest. With the help of optimization techniques and algorithms, built models will identify the critical parameters from the inputted data. We introduce an Attention-based CNN model on 117-dimensional Vicon sensor angle data to enhance the sensor's performance in identifying the performed exercise. Convolutional layers in the network will help extract the input data's in-depth features, and LSTM layers mine the long-time series features. We have used the UI-PRMD - Vicon ten movements data for building the proposed model. Our attention model has outperformed many complex architectures with an overall average of 0.007881 MAD and 0.012343 RMSE for ten movements.

Murillo, Julieta

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Social Work**

Author/Contributors:
Julieta Murillo,
Emma Velazquez

Abstract Name: **An Analysis of Youth in an Upward Bound Program**

This research project focused on a strength-based assessment for youth entering the Upward Bound program. The Upward Bound program is a program at UW-Eau Claire that is federally funded and dedicated to the preparation for, admission to, and successful completion of a college degree. This program applies to first-generation and/or low-income high school students. The research collection focused on identifying assets in the students' lives and the strengths they possess, rather than analyzing the hardships they face and skills they may lack. The reason for this positive approach is that it has been found in past Upward Bound programs to better cultivate concrete change. This prompts students to first acknowledge and celebrate the networks they already have built around them. In order to further understand their environments a mixed-method approach was used. The qualitative data was collected through interviews, in which the questions focused on the participant's school experience, neighborhoods, and what their typical day at home would look like. In addition, the participants created ecomaps, timelines of important life events, and genograms. This process allowed for a connection to be built between the researcher and the participant. As for the quantitative data, the participants were given a Strengths and Difficulties Questionnaire (SDQ) that focused on their emotional well-being. Through this research, it was shown that COVID-19 has negatively impacted youth and their environments. The SDQ total of 2022 has shown an increase in conduct problems, peer problems, hyperactivity, and prosocial skills in comparison to 2019. As for the qualitative analysis, key themes were safety issues (drug use/ fighting) at school as well as racism/inclusivity.

Murphy, Anastasia

Institution: *MA - Bridgewater State University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Lucy Alimamy,
Ana Murphy,
Nicole Munoz Ordonez

Abstract Name: **Perception of Social and Physical Environmental Risk Factors Affecting Women Experiencing Homelessness: A Mixed Method Study**

Homeless people in general confront many difficulties that make their lives very challenging. However, when it comes to women experiencing homelessness, those challenges can threaten their own well-being by increasing the risk of victimization and decreasing the levels of personal safety. This research project has three aims: first, to better understand the link between victimization and social and physical environment as it relates to homeless women; second, to recognize which aspects of the social and physical environment homeless women find threatening and difficult to overcome; and third, to examine the areas of conflict within the coexistence of homeless women in a mixed-gender transitional shelter. This study is based on a mixed-method approach. The data are drawn from fivein-depth interviews and from secondary survey data collected by Ozanam Manor, a faith-based agency. The qualitative analysis uses a naturalistic perspective to study homeless women in their own living settings in a transitional shelter and provides a rich, contextualized understanding of homeless women's perception of risk. We also analyze secondary survey data collected by Ozanam Manor and use correlation analyses to understand the relationship between social environments and respondents' safety perceptions.Our research goes a step further by assisting Ozanam Manor in identifying and comprehending areas for improvements, such as security and staffing, in order to better accommodate and meet the needs of the individuals of their institution, as communicated by the women in our study.

Murphy, Brendon

Institution: *VA - Virginia Commonwealth University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Brendon Murphy

Abstract Name: **Hospital Employee Assistant Programs: Reducing Mental-health-related Surgical Mistakes for Oncology Surgeons**

Oncology surgeons statistically suffer from one of the highest stress and mental health issue rates in the medical field. Previous research states that effective Employee Assistance Programs (EAPs) have been put into place within hospitals to assist with these issues. However, the programs are underutilized and currently not reaching their intended potential. Stress in the medical field is climbing with a rapid decrease in thenumber of oncology surgeons available and multitudes of sick patients post-covidthat have capacitated hospitals. It is necessary now more than ever to implement mental health changes before the mental decline of oncology surgeons furthers. Oncology surgeons mainly suffer from a stigmatism that currently encompassesreceiving mental help due to thepotentiallynegative effect it may have ontheir medical license and the judgmental workplace interactions that may follow any employee-based mental-health-related conference. Due to an inability to seek help, oncology surgeons are enduring mass amounts of stress and burnout fatigue resulting in a rise in mental-health-related surgical mistakes made during operations. Throughanalyzing multiple journals based on self-reported surveys analyzingmental health, burnout, and stress, as well as electrocardiogram data, I have created steps forward to better implement EAPs. These steps include but are not limited to leadership training on mental health awareness, increasing awareness of the signs of mental health strain, and teaching oncology surgeons stress management practices that they can implementwithin their workplace. By taking these steps among others to implement better workplace environment standards in hospitals, oncology surgeons will be more likely to participate in already effective EAPs, therefore, improving their mental health, and decreasing the amount of mental-health-related surgical mistakes made during operations.

Murphy, Caroline

Institution: *KY - University of Kentucky*

Discipline: Education

Author/Contributors:
Bryan Birch,
Caroline Murphy

Abstract Name: **Investigating Preservice Teachers' Understandings of the Causes of the Seasons**

Understanding the causes of the seasons is a major concept addressed in A Framework for K-12 Science Education and the Next Generation Science Standards (NGSS) in grades K-12, and a concept preservice K-12 teachers are expected to understand. The purpose of this explanatory mixed-methods study was to assess preservice teachers' understanding of causes of the seasons and categorize prevalent alternative conceptions they have about this domain. Seventy-two undergraduate students enrolled in education courses at a large midwestern university and a small midwestern liberal arts college participated in the study. A multiple-choice concept inventory survey including two open response tasks was developed from the research literature for the study. The survey data were then used to purposefully select a stratified sample of students to participate in a follow-up conceptual interview. Descriptive statistics were used to analyze concept inventory data, and qualitative deductive coding using a constant comparative method was used to analyze interview responses. Preliminary survey findings collected from the liberal arts college indicated an average score of 5.39 out of 15 (35.9%) with a range from 2 to 12 and a median of 5. Overall, they demonstrated greater understanding on questions answerable from an Earth-based perspective with a mean of 65% on three questions. These tasks addressed the time of year their region experiences the greatest amount of sunlight and naming the corresponding season in the southern hemisphere given the northern hemisphere season. Students scored the lowest (mean of 28% on 10 tasks) on tasks that required explanations from a space-based perspective, such as causes of the seasons and why there is more sunlight during summer in the northern hemisphere. Details from the entire data set from 72 students and concept interview also will be presented.

Murray, Samantha

Institution: *MI - Northern Michigan University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Samantha Murray,
Vince Jeevar

Abstract Name: **Influence of Social Media and News Apps on Anxiety in College Students**

Social media and news applications (SMNA) are widely used across the globe, especially among college age individuals. With this technology comes many benefits, like networking and sharing ideas and thoughts, however, it also comes with plenty of costs. These costs seem to manifest as poor mental well-being, heightened levels of anxiety, and a negative body-image (Bashir; Bhat, 2017). The purpose of this study is to examine the relationship between use of SMNA and levels of anxiety. This will be accomplished by comparing two groups of college students, roughly 50 participants,and their use of social media and news applications along with a self-report of anxiety over the course of two weeks. Data collection will take place during the first two weeks of February 2023. To analyze the statistical data, use of SPSS software and a One-Way Paired-Samples t-test will be optimal. Results of the study will be compiled into deliverable outcomes which area written research paper and a poster presentation. These will be completed before March 30th, 2023. Based on previous literature reviews by Bashir; Bhat (2017) and Saiphoo; Vahedi (2019),results are expected to show a positive relationship between use of social media and news applications and levels of anxiety in sampled college students. The results of this study will impact future research examining the effects of social media and news applications on mental health which is important in an age with unprecedented technological developments.

Murthy, Akul

Institution: *CA - San Jose State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Hinal Ahir,
Akul Murthy,
Darshan Mundewadi

Abstract Name: **Automated Temperature Control of a DBD Plasma Jet Through Feedback Loop**

Low temperature, non-thermal Dielectric Barrier Discharge (DBD) plasmas find wide applications in plasma medicine. Due to their low gas temperatures, along with numerous radicals such as Nitrogen and Oxygen reactive species, plasmas are able to heal and sterilize wounds. A plasma jet is formed when voltage (~5-10 kV, 20-40 kHz) is applied to a Helium gas (~10-20 slpm). During medical application, it is important to limit the temperature of the plasma jet to avoid any damage to the exposed cells. For practical purposes, the control of plasma gas temperatures in real time is required. In this study, an automated system has been designed using stepper motors, a power supply, a K-type thermocouple, motor controllers, and an Arduino microprocessor. The system is designed to constantly read the plasma jet temperatures, light the green or red LED indicating the safe temperature zone, and controlling the power supply through a feedback loop control by adjusting the power knob of the power supply in an automated fashion. The optimum operating temperature was fixed at 30 degrees centigrade (obtained from literature for safe plasma operation) and the system was activated as soon as the temperature deviated from this targeted value. In this study both a helium plasma jet and a helium plasma sheet were scanned by a thermocouple to obtain two-dimensional temperature distribution with and without the automated system. Experimental results show that the feed back control system was able to control the temperature by adjusting the power supply in a correct manner. The plasma temperatures near the exit of the plasma device were found lot higher than 30 degrees Centigrade. The plasma jet exhibited lower temperatures as it propagated through the air. The presentation will describe the automation process in a greater detail and will discuss the experimental results from biomedical application perspective.

Musa, Deeqa

Institution: *NC - North Carolina State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Deeqa Musa *Jason Cox* *Jacqueline Cole*

Abstract Name: **Finite Element Analysis of Trabecular Bone Microstructure with Passive Joint Loads Following Brachial Plexus Birth Injury**

Plate- and rod-like struts within trabecular bone have distinct mechanical roles. Typically, plates are primary load-bearing structures associated with elevated stress, whereas rods preferentially concentrate strain to protect plates from microdamage. Our unique approach combining finite element analysis (FEA) with topological characterization of trabecular plates and rods enables the analysis of stress and strain distributions to evaluate this specificity of plate and rod roles. Brachial plexus birth injury (BPBI) occurs in 1-3 per 1,000 births due to excessive stretching of the infant neck and shoulder. Postganglionic injury (Post) commonly results in muscle contracture, limb disuse, and deformity of the shoulder joint, whereas preganglionic injury (Pre) results in limb disuse without contracture or deformity. In both cases, trabecular bone mass and structural organization are reduced. Although bone changes following BPBI may limit functional use of the arm, current treatments primarily target nerve and muscle tissue, not bone. Understanding deficiencies in joint shape and trabecular bone structure, and their interactions, is essential for developing better approaches to target bone. To investigate we are performing contact FEA on micro-computed tomography-based models of rat shoulders that received one of three surgical interventions – Post, Pre, and Sham (uninjured control) neurectomies – using joint reaction forces (JRFs) for these groups from a previous musculoskeletal modeling study. JRFs will simulate passive loading from group-specific resting muscle tensions, and resulting element stresses and strains will be analyzed for a select volume of scapular trabecular bone, comparing median values between plates and rods. We anticipate stress concentrations in plates and strain concentrations in rods will correlate with the degree of joint deformity, previously quantified in a shape analysis study. These results will provide stronger evidence forcausal links between altered joint loading, trabecular bone deterioration, and joint deformity post-BPBI, and will inform better treatments that target bone morbidities.

Musilli, Grace

Institution: *DC - American University*

Discipline: Education

Author/Contributors:
Grace Musilli

Abstract Name: **Does Class Size Matter: Pupil Teacher Ratios Impact on Student Achievement**

Educational practices and policies have been debated among educators, policymakers, and others for ages. The idea of class size and pupil teacher ratio (PTR) exemplify this idea. In the existing literature, there are varied opinions as to how we should handle the number of students per classroom. Some researchers show that smaller class sizes can be beneficial to both student achievement and closing the educational gap for students of color. Others are concerned that both class size research and policies lack supporting evidence and therefore should not be attempted. Meanwhile, lawmakers and policymakers continue to invest large amounts of money into class size reduction (CSR) policies including states like California and Florida. This research seeks to reframe and question current policies by determining to what extent low pupil teacher ratios influence student achievement. Using regression and correlation tests, the results produce the conclusions that while math achievement is not affected by class size, ELA achievement in combination with the percentage of African American students does influence test scores. The results lend themselves to a plan for future class size policies that are more in tune with the current state of education and the students who will be affected.

Myer, River

Institution: *MD - Salisbury University*

Discipline: History

Author/Contributors:
River Myer

Abstract Name: **The 1980s and the Cold War: Understanding the Climax of the Cold War Through the Lens of Historical Narratives.**

The Cold War has long been understood to be a decade's long conflict of hostile interactions between the United States and the Soviet Union, defined by open distaste and resentment from both sides. The 1980s saw a pivotal change in the standard Cold War mindset of conflict and disagreement, in favor of collaboration and negotiation, motivated by global social, political, and economic realities that made the current state of the Cold War unsustainable. The historical narratives in secondary literature provide conflicting stories relating to the crucial role Ronald Reagan and Mikhail Gorbachev played in shifting the tone of the Cold War. And it is essential to investigate the truthfulness of these narratives, by comparing the constructed stories to the facts and evidence in primary literature. This study is focused on understanding how constructed narratives shape and influence our perception of Cold War leaders, how these leaders influenced their narrative and how secondary literature can sometimes mislead one into believing something untruthful. Using primary sources from presidential archives, the Foreign Relations of the United States Archive, and other collections, historical narratives can be analyzed in relation to the facts presented in such documents to create a better understanding of what actually occurred. Investigating the narratives around Gorbachev and Reagan is key to better understanding their relationship, goals, and desires for ending the Cold War and reforming the international diplomatic standard set in the aftermath of the Second World War.

Myers, Spencer

Institution: *AZ - Northern Arizona University*

Discipline: Business

Author/Contributors:
Spencer Myers

Abstract Name: **What do humans perceive in asset returns?**

Hasanhodzic et al. (2019) challenge Malkiel's (1973) asserting that market returns are visibly differentiable from fabrication. In the authors of the original study conducted a game to determine if humans can differentiate real and randomly generated stock market trend. Concluding that humans can perceive differences between which was generated, and which was sampled from real price markets. Moreover, when indicated if they were guessing correctly as they played, participants improved their scores. These findings have implications for the Efficient Market Hypothesis, Technical Analysis, and regulatory guidance. There are three pivotal aspects motivating replication. First, the original study was done with less than 56 subjects collected via Amazon Mechanical Turk, and none of the participants information was used. The factors at which the game is conducted clearly influenced results. Secondly, subjects were presented information live, meaning participants are given information accurate to real markets. Thirdly, participants were presented with two options, then reveal whether they were correct with their choice, providing players with an advantage that isn't available to every investor in the stock market. Being presented with an extremely binary decision, everyday investors are weighing over 3,000 individual choices every day.The study's intention is to replicate the original under its initial conditions. Further iterations of the game will have individuals be presented with static charts, in which they will be presented with two random stocks. The only moderation will be gauging the results of the game, conducted after trial periods. Researchers will send out surveys documenting participants age, gender, and education level. All data regarding participants information will be strictly confidential and remain disconnected from game results. This is to ensure strict control variable for data analysis. Once completed, the game will be released will run via a private server. All participants will be sourced from Northern Arizona University.

Myers, Tyler

Institution: *TN - University of Tennessee at Knoxville*

Discipline: Biology

Author/Contributors:
Tyler Myers *Jennifer Heppert, Ph.D.* *Heidi Goodrich-Blair, Ph.D.*

Abstract Name: **Investigating the Role of HpaBC in Modulating Host Nematode Development**

Nematodes are useful models for understanding the molecular basis of animal-microbe interactions, including how bacterial products impact animal development and behavior. Their utility as a model is based on their ease to rear in captivity, their genetic tractability, and the plethora of genetic tools already available for their analysis. Entomopathogenic nematodes, like those of the genus Steinernema, are especially useful because they engage in a co-evolved, specific symbiosis with members of the bacterial genus Xenorhabdus. Steinernema carpocapsae nematodes cultivated with its specific Xenorhabdus nematophila symbiont exhibit defects in growth and egg-laying behavior when grown on a mutant form of X. nematophila that lacks the stress-response transcription factor rpoS, compared to wild-type controls. The X. nematophila RpoS regulon includes the hpaBC locus, encoding enzymes that could act on dopamine metabolite intermediates. We hypothesize that the growth and egg-laying phenotypes observed in nematodes reared on the rpoS mutant symbiont result from modulating nematode dopamine levels through differential expression of HpaBC. To test this hypothesis, we created Xenorhabdus strains with tunable rpoS and hpaBC expression using Xenorhabdus griffiniae, the endosymbiont of Steinernema hermaphroditum, a species for which genetic tools are rapidly emerging. We then grew S. hermaphroditum on lawns of these inducible strains, both with and without an arabinose inducer present, and compared body length against nematodes grown on wild-type X. griffiniae. Arabinose induction produced significant changes in nematode size across treatment conditions, indicating that the activity of RpoS and HpaBC in bacteria have effects on host growth. These assays on developmental phenotypes will be paired with assays on behavioral phenotypes, such as those mediating egg-laying. Additionally, since HpaBC is well-conserved across nearly all bacterial phyla, future investigations may highlight HpaBC homologs as dopamine synthesis modulators in other animal hosts.

Myhre, Alexis

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: **Sociology**

Author/Contributors:
Rachael Ojeikhodion,
Alexis Myhre

Abstract Name: **Breaking Down Barriers: Providing Adequate Sexual and Reproductive Health Education, Access, and Awareness in Health Science Focused University**

The majority of students in colleges and universities in the United States are sexually active. Unintended pregnancies, contraction of sexually transmitted infections, and relationship/sexual violence negatively impact students' educational trajectories. College students who lack access to sexual health education, resources, and preventative services are at greater risk of adverse outcomes. Students attending the University of Minnesota Rochester (UMR) do not have readily accessible, or adequate, sexual and reproductive health resources. This newly developed satellite campus is comprised of 78% women and 82% of the students are aged 18-21. A student-driven inquiry of 95 UMR students revealed that 70% indicate no or uncertain access to sexual health education on campus. Only 12% of UMR students report easy access to sexual health services. Nearly 70% of students report cost, privacy and/or confidentiality contribute to significant barriers to contraceptive attainment on campus.As part of a pilot study, graduates of UMR implemented a grant-funded system to provide increased accessibility of contraceptives and reproductive products on campus. This pilot program assures confidentiality as access to sexual health resources is provided. In addition, a survey was designed and implemented to assess socio-demographic information, understand perceived and real barriers to sexual health services, resource acquisition on campus, and to briefly assess UMR student sexual health behaviors. Here we report our findings and lessons learned from this innovative solution to meet student reproductive and sexual health needs.

Nabi, Husna

Institution: *TN - Belmont University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Teel Walters,
Husna Nabi,
Jordyn Wilcox,
Davon Ferrara

Abstract Name: **The Toxicological Effects of Duloxetine as a Polymeric Nanoparticle Drug Delivery System in Rats**

Duloxetine (Cymbalta), a serotonin-norepinephrine reuptake inhibitor (SNRI) is an antidepressant which has previously shown relatively low negative toxicological effects and promising depressive symptom management. However, Duloxetine (DLX) encounters an issue in its drug delivery performance due to its high metabolic dissolution rate which can influence both potency and efficacy. Nanoparticles, in particular, Solid Lipid Nanoparticles (SLNs) can be used as an effective drug carrier system for DLX. If DLX is paired with a SLN (SLN-DLX) for depression treatment, it could provide a relatively low toxicity effect while increasing the concentration of the drug's potency in particular to the brainstem and 5-HT terminal areas. While using nano-template engineering techniques, SLN-DLX solutions were fabricated to be further analyzed for toxicological analysis in a rodent model. Equal numbers of 3-month-old male and female Long-Evans Rats received daily 10 mL/kg intraperitoneal (IP) injections of either 5 mg/kg DLX, 5 mg/kg SLN-DLX, SLN, or saline vehicle on four consecutive days. General physical appearance and daily weights were recorded during treatment. Rats were euthanized and brains collected and post-fixed in paraformaldehyde on the fifth experimental day for further histological analysis. We hypothesized that rats with SLN injections and SLN-DLX injections will exhibit no toxicological differences when compared to the saline group. There was no significant effect on weight in any treatment group, p > .05. Histological analyses are forthcoming, but we hypothesize that there will be no significant toxicological difference between treatment groups. For future directions, we hope to conduct a study looking into behavioral differences in chronic stress induced rodent models from the same administration of treatments

Nachreiner, Abigail

Institution: *MN - St. Catherine University*

Discipline: Economics

Author/Contributors:
Lacey Chu *Isabel Honzay* *Abigail Nachreiner*

Abstract Name: **Pedagogical shift and parental mental health during the COVID-19 pandemic: Evidence from the United States**

The global COVID-19 pandemic has negatively affected the mental health of individuals around the country. As a part of social distancing measures, the pedagogical shift from in-person to online learning and class cancellation for primary and secondary schools has increased the stress and anxiety of parents during the pandemic. In this study, we aim to explore the effect of pedagogical shifts, including in-person to distance learning or class cancellation, on the mental health of parents with school-aged children in the United States. Our study utilizes a national dataset from the Household Pulse Survey collected by the Census Bureau from April 23, 2020, through December 21, 2020. After applying the data to the multivariate regression models, we found that pedagogical shifts significantly increased the severity of anxiety and depression symptoms and worsened parents' mental health. Notably, parents with children who had their classes canceled experienced significantly higher levels of anxiety and depression symptoms than those with children who switched to distance learning. These findings were first verified robustly using an alternative model - the ordered logit regression - by considering the anxiety and depression levels as discrete variables with ranking. We then checked our results by using alternative mental health measures for anxiety and depression disorders and estimated the effects of pedagogical shifts using the linear probability model. We further conducted a heterogeneous analysis by exploringpedagogical shiftingeffects by gender, race, working status, and political affiliation by the 2020 presidential elections. Our results reveal complex variations by different groups of parents affected by the pedagogical shift due to the Pandemic. These findings highlight an urgency for state, federal, and societal policy changes to address the growing mental health issues and disparities among parents with children during these challenging times in the United States.

Naef, Mage

Institution: *NC - Western Carolina University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Mage Naef

Abstract Name: **Current Determinations of the Biochemical Mechanisms of the Amatoxin Alpha-Amanitin: A Literature Review**

Destroying angel mushrooms are the leading cause of macrofungi poisoning deaths across Eastern Europe and Asia. These mushrooms, scientifically known as Amanita Verna and Amanita Virosa, are incredibly deadly due to their high concentrations of the amatoxin α-amanitin which causes liver and kidney shutdown, oxidative stress, and necrosis. This paper is a reflection on ongoing research on α-amanitin to provide a comprehensive overview of current knowledge of this deadly chemical. Scientists have determined that α-amanitin inhibits transcription of RNA polymerase II but are still unsure of the exact mechanisms. Recent literature shows that these transcription issues may be partially caused by pyrophosphate release inhibition and by blocking bridge helix bending, but other discoveries, such as RNA pol II showing an ability to form multiple phosphodiester bonds without alpha-amanitin dissociating, show that these theories are not the full picture. Due to a lack of understanding of the true protection mechanisms of α-amanitin, there is no specificantidote for the toxin. Current treatment methods are relatively ineffective, focusing on symptom treatment and supportive therapy. New research into mechanisms of action of α-amanitin is beginning to provide insight into the root causes of α-amanitin-induced cytotoxicity, opening new opportunities for the development of tailored antidotes.

Nagaokar, Soham

Institution: *MD - University of Maryland College Park*

Discipline: **Business**

Author/Contributors:
Aarushi Malhotra,
Joanna Ihm,
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Benjamin Bral,
Seth Gleason,
Johnny Rajala,
Daniel Zhu,
Kyle Truong

Abstract Name: **Detecting Bias in Intelligent Autonomous Hiring Systems**

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Nandi, Supratik

Institution: *CA - University of California - Merced*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Supratik Nandi,
Antoine Shahin

Abstract Name: **The Audiovisual Time-Flow Illusion's Implication On Speech Comprehension In Noise**

We (the Shahin Lab) recently introduced the Audiovisual Time-Flow Illusion (ATFI). The ATFI is a novel phenomenon in audiovisual speech perception whereby an illusory "pausing/slowing down" or "skipping/speeding up" is perceived in the visual modality when temporally intact visual speech is merged with auditory speech containing skipping or pausing. The reverse stimulus manipulation does not induce "pausing/slowing down" or "skipping/speeding up" in the auditory modality. Thus, the ATFI signifies the auditory modality's role in setting the pace of the visual modality, whereby visual perception of incoming speech, skips and pauses to keep pace with temporal changes in the auditory discourse. In natural speech, mouth movements typically precede sound production, suggesting that the visual modality has a predictive role in unfolding speech signals. The ATFI suggests that the visual modality realigns its pace to that of the auditory modality to maintain its predictive impact on audiovisual speech processing. In the present study, we are investigating the relationship between ATFI perception and comprehension of speech in noise.In one condition, participants will be presented ATFI stimuli in which auditory speech containing pausing or skipping are merged with temporally unaltered visual speech. In the second condition, the same participants will be presented with audiovisual speech samples (sentences of varying lengths) merged with white noise. The stimuli and condition order will be randomized for counterbalance.Due to the visual modality's predictive quality in natural speech, we hypothesize that individuals who perceive the ATFI more strongly will have stronger predictive impact and, as a result, will be better at comprehending speech in noisy environments.

Narkiewicz-Jodko, Alexander

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Alexander Narkiewicz-Jodko

Abstract Name: **Computational Investigation of Triplet Excited States of Alpha-pyrone**

Electronic excited states are key intermediates in photochemical reactionmechanisms. An excited state is formed via the promotion of an electron from a ground-state molecular orbital to a molecular orbital of higher energy. In this study, we are investigating the excited triplet states of the α-pyrone molecule. The excited triplet state describes a molecular species in which an electron has undergone a spin flip in addition to orbital promotion. In the field of quantum chemistry, popular density-functional theory (DFT) methods can calculate the ground-state molecular properties accurately; however, DFT methods have limited success for molecular excited states. Density-functional based calculations are reputedly worse at calculating molecular excited-state energies compared to more rigorous wave-function based methods. In this work, we propose an enhancement to the DFT-based Grimme method [Grimme, S.; Izgorodina, E. Chem. Phys. 2004, 305, 223.] for the calculation of triplet excitation energies. Our approach retains DFT for calculating the triplet-state geometry but involves a highly reliable wavefunction-based method for calculating the energy of the excited state. We have tested our “enhanced Grimme method” on a well known control system, 2-cyclohexenone and find that the predicted and experimental excitation energies differ by less than 5% of the experimental value. Using the enhanced Grimme method, we have investigated the structural and energetic properties of the T1(n,π*) and T1(π,π*) states of α-pyrone. Our calculations onα-pyrone yield unexpected results that depart significantly from experimentally known features of the γ-pyrone isomer.

Nascimbeni, Carly

Institution: *MD - Salisbury University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Carly Nascimbeni

Abstract Name: **Do Prisoners Need Ethics or Does Ethics Need Prisoners?: Ethics Education in Prison Combats Epistemic Injustice**

Prisoners are harmed in their capacity as epistemic agents. That is, they are discounted and marginalized as knowers, reasoners, and questioners. I argue, they are particularly harmed as epistemic agents of ethics due to their criminal background and assumed lack of moral and ethical integrity. This status removes them from activities such as ethical debate, reflection, and dialogue, which would aid in rehabilitation: steadying themoralmind, developing moral integrity,forming an ethical identity and a personal moral history and ultimately reconciliation with society. Beginning with a workshop around the text Ethics fo rEveryone(Churchill, 2020), my mentors and I have developed a flexible ethics-based curriculum into the context of a prison volunteer program. The ethics activities are facilitated by students and faculty,which increases trust and dialogue between the prisoners and the wider campus community. Volunteer programs led by students and faculty break down prejudice through exposure and allow prisoners to reach a degree of credibility that would have existed if not for the prejudice. Educational opportunities are limited and often restricted to those serving long-term or life sentences and volunteer programs bridge the educational gap in prisons. This kind of program also allows for the knowledge exchange that would typically be lacking from one institution to another. I argue that prisoners’ participation in ethics based activities will not only work to combat epistemic injustice (Fricker, 2007), but until we include the excluded, we will only scratch the surface of many ethical issues and considerations.

Nasik, Basith

Institution: *WI - University of Wisconsin-Superior*

Discipline: English/Linguistics

Author/Contributors:
Jessica Waldbillig,
Malita Villamayor,
Basith Nasik

Abstract Name: **University of Wisconsin-Superior Writing Center: Collaboratively Creating an Equity, Diversity, and Inclusion Statement**

In this presentation, we will be discussing the content and process of creating an Equity, Diversity, and Inclusion (EDI) statement. We specifically worked on an EDI statement for the University of Wisconsin-Superior Writing Center. We, as Writing Center staff, felt it was important to have our own EDI statement in addition to our University's general statement. We wanted to make it specific to what we do: meet students where they are in their writing journey and give them the tools to expand their writing skills. With our EDI statement, we wanted to emphasize that the Writing Center is a place of learning for everyone regardless of their race, ethnicity, sexuality, cognitive ability, etc. In addition, we wanted to emphasize that we, as writing consultants, are committed to having a growth mindset. After the idea was pitched in a staff meeting, we analyzed Inclusivity/Anti-Racism statements from four organizations outside the University. We then identified ideas we felt were important before combining them into three themes relevant to the Writing Center: linguistic freedom, anti-racism and inclusivity, and safe spaces. With these themes in mind, we drafted a statement and got feedback from other campus organizations. After several revisions, the final EDI statement was published on the UW-Superior website. One major benefit of collaboratively creating our EDI Statement is that it helps us to reflect and prioritize our shared goals and values—plus, it communicates our values and priorities to the entire campus. Our EDI Statement encourages diverse voices and welcomes people of all identities, including those based on neurodiversity, which echoes our mission statement.

Nataraj, Sreekiran

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Sreekiran Nataraj,
Katherine English,
Muthukumar Karuppasamy,
Peter King,
Matthew Alexander,
Michael Lopez

Abstract Name: **Mapping Functional Performance Degradation in mdx5CV Mouse Model**

Introduction: Duchenne muscular dystrophy (DMD) is a fatal X-linked recessive disorder resulting in progressive muscle degeneration and weakness. The mdx5CV mouse model of DMD is a more severe mouse than the more commonly used 10ScSn-Dmdmdx/J (mdx) model of DMD. This is an important because the classical mdx mouse model is mildly affected. However, the in vivo grip motor function performance of the mdx5CV is not known at disease specific timepoints. Thus, we proposed to measure grip strength function of the mdx5CV at advancing stages of disease progression.Methods: The grip strength test measures the force which mice pull on a force transducer. We measured maximum grip strength in control mice to assess performance characteristics at 1, 2, 3, and 6 months of mice age.Results: The preliminary experiments demonstrate maximum grip strength mean of 5.54±0.6 g force/g weight in a 17-week-old control cohort.Interpretation: This study quantifies the grip strength performance in a control cohort which will then be used for comparison in mdx5CV mouse model. Specific grip strength mean and variability were comparable to previously reported data in control mice.Conclusion: Through data collected through the grip strength assay, we can measure the physical capabilities of mdx5CV mouse model over time. This data will be pivotal in understanding temporal evolution of weakness in mdx5CV model forming a basis for assessing pre-clinical interventions on in vivo motor function.

Nate, Maiya

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maiya Nate *Katherine Osborne* *Maggie Kaiser*

Abstract Name: **Unconscious Bias or Trainable Attitudes? Training Implicit Biases That May Be Detected in the Implicit Association Test**

Implicit Association Tests (IAT) are intended to measure beliefs that people are unable to admit (Project Implicit).Architects of the IAT acknowledge that results are only weakly correlated with measurable behaviors.The purpose of the current research was to determine whether a neutral implicit association could be trained into participants and subsequently be detected on an IAT. Participants were trained to associate negative words with angular shapes, and positive words with rounded shapes. Training sessions presented angular or rounded shapes, followed bypositive or negative words. Participants had to press “correct” or “incorrect” buttons depending on the shape and word association shown. After completing all training sessions, participants were given an IAT to determine whether they showed an implicit preference for rounded shapes. The IAT was created using the experimental design utilized by the IAT Website according to the methodological designs provided by the authors (Project Implicit) and replication studies (Jain et al, 2022). Data collection is currently ongoing. During the training session, trainees’ reaction times were tracked to measure the strength of the associations being developed between shapes and positive and negative stimuli. After completing the IAT, trainees’ scores on the rounded/angular shape IAT will be analyzed using the standard chi-squared analyses to identify the presence and strength of implicit associations. Additionally, using a X2 test of independence, trainees’ IAT scores will be compared to scores of untrained participants who complete the same IAT. If results indicate that trainees exhibit implicit associations between rounded shapes/positive words, and angular shapes/negative words, and do so to a greater extent than control participants, this will suggest that implicit associations detectable by IATs can be formed quickly, and with relatively few exposures to previously nonexistent associations. These findings hold implications for understanding implicit associations and contribute to conversations on developing bias awareness training.

Nava, Jennifer

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Jennifer Nava,
McKenna Hogan,
Braydon Pesnell

Abstract Name: **Discrepancies Between Cleaning Procedures in Medical Settings Regarding Clostridioides difficile Prevention**

Clostridioides difficile (C.diff), a common healthcare-associated infection (HAI), is a gram positive bacteria that causes life-threatening diarrhea (12,800 deaths in the US in 2017) especially in immunocompromised individuals. Patients who receive extensive broad-spectrum antibiotic treatment develop this infection and it is highly contagious in clinical environments. Despite it being primarily spread through exposure in medical settings, there are no standardized procedures between facilites on sanitizing surfaces after coming into contact with a patient who is positive for C.diff. The goal of this research is to compare cleaning procedures and determine which is most effective at killing C.diff on surfaces as it survives common disinfection due to sporulation. Surveys will be sent to various medical facilities nationwide inquiring about patient history, cleaning techniques, and follow up testing to see if the C.diff spores were eradicated. Following their responses, each procedure will be evaluated on its efficacy to eliminate spores based on CDC guidelines. After the research is performed, it will be evident by the variation of C.diff isolates between regimens that some policies are superior to others and there should be standardization between healthcare facilitesto better prevent the spread of severe HAIs.

Navarrete, Angel

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Angel Navarrete,
Zach Wagner,
Stephen Levas

Abstract Name: **Analysis of Sedimentary Phosphorus in Rice Lake, Whitewater WI**

As a result of anthropogenic inputs and use, lakes are experiencing increased eutrophication. This accumulation has led to increased algae blooms which can be detrimental to the aquatic ecosystem. Rice Lake, just south of Whitewater WI, faces increased aquatic plant growth and harmful algal blooms. Currently, there is a lack of understanding on potential internal loading of nutrients into the basin and how those nutrients persist in the system. Thus, the aim of this study was to determine the total phosphorus (TP) and total organic carbon (TOC) sediment load across the lake at the sediment surface and at depth. Sediment cores were collected at 30 locations distributed throughout the lake. TOC was determined via loss upon ignition while TP was extracted from dried sediment samples using HNO3 and H2O2 and subsequently analyzed using ICP-OES. In the top 0 –7.3cm level of sediment, the average TP load was found to be 834.871(+/- 37.526) mg/kg while TOC was 541.671(+/- 4.558) g/kg. In the 7.3 –14.6cm layer, TP 837.549 (+/- 27.95) mg/kg and TOC 621.779 (+/- 5.455) g/kg. The bottom 14.6 – 21.9cm level had a TP load of 826.853 (+/- 39.096) mg/kg, and TOC 632.021 (+/- 4.588) g/kg. No significant stratification or sediment horizons were found between the layers of sediment. This coinciding with the similar TP and TOC levels at all depths suggests that the lake sediment is organically derived and most likely a significant source of labile Phosphorus.

Navarro, Alberto

Institution: *CA - San Jose State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alberto Navarro,
Pranav Satyadeep,
Sohail Zaidi,
Vimal Viswanathan

Abstract Name: **Modeling a Bifacial Solar Panel for Characterization and Performance Evaluation**

Bifacial solar panels are gaining attention due to their superior performance that comes from their ability to generate additional output power (5-10%) by absorbing the solar irradiance from the back surface. Bifacial PV modules still need to be characterized for their overall performance. To evaluate the performance of the bifacial PV modules, attempts are underway at San Jose State University to develop a solar model along with a thermal analysis model that will be then validated by our experimental data. In the current presentation, a thermal analysis model developed for a bifacial PV model is included. For this purpose, a JJN Solar Panel 200 W bifacial PV panel was selected. Basic measurements include the short circuit current and open circuit voltages at various operating conditions. The thermal analysis model includes the basic structure of the panel by considering various layers of the PV module e.g., front surface with antireflection (AR) coating, followed by an emitter layer (P+ Si) and N type wafer that is followed by aluminum back surface layer with AR coating. Thermal conductivities and respective thicknesses of all layers were used to complete the thermal resistance model that was then used to find panel's surface temperatures by keeping a constant flux condition on both the front and back surfaces. Depending on the incident flux, surface temperatures were found varying from 50 to 60 C at the front side as compared to 35 – 30 degrees on the back side of the PV model. For he electrical modeling, five parameters equivalent circuit model proposed by MA et. al. [2019] was employed. Skockley diode equation was modified for the PV panel and IV characteristics were plotted by obtaining the data from the experiment. Final poster will include the details on our experiments and the associated results.

Nayab, Fizza

Institution: *NY - Brooklyn College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Fizza Nayab

Abstract Name: **How People Assign Causal Blame: Prototypical Rules vs. 'Phantom Rules'?**

My project focuses on recognizing how people assign causal responsibility for punishments that happen because of rules that are rarely enforced vs. those that are frequently enforced. Rules are supposed to hold everyone together in a community. However, many rules are frequently broken without consequence, e.g. jaywalking and downloading illegal music, which fit into a certain category: “phantom rules.” On the other hand, prototypical rules exist which involve rules that are non-negotiable and often result in punishment when broken, e.g. not wearing a seatbelt when driving or not stopping at a stop sign.Prototypical rules are associated with the expectation of punishment which causes people to fear breaking it or they expect to get caught. ‘Phantom rules’ become a special case where people believe the action is not wrong, although it is illegal. So, when a ‘phantom rule’ is enforced, the blame goes to the enforcer such as a large company instead of the person who breaks the rule, and the enforcer is seen as more causally responsible. This is a different reaction from prototypical rules, where rules are constantly enforced, and punishment is given.My research aims to analyze how people judge causal responsibility and assign blame and punishment when certain rules are broken compared to others. I plan on using data collected from scenario-based assessments where participants would be given out of the two versions created; each version would be the same except one would have a rule being enforced with punishment while the other would not, that rule is rarely enforced. This would be followed up by asking the participant to scale different factors, blame, wrongness, etc. Some of the variables I plan on examining are age, gender, and political ideology. This research will help identify how people feel about codified rules and the law.

Naylor, Katherine

Institution: *IN - Valparaiso University*

Discipline: Sociology

Author/Contributors:
Katherine Naylor

Abstract Name: **Cognitive Mapping: An Examination of the Mercator Effect Hypothesis**

In his theory of the “Mercator Effect”, Arno Peters claimed that because the Mercator Map Projection, one of the most commonly used map projections world-wide,distorts the northern hemisphere to appear larger than it is and the southern hemisphere smaller, people most familiar with this map projection will have their cognitive maps, i.e., their mental image of the world, distorted to assume that the northern landmasses are much bigger than in reality. Peters named this cognitive distortion the “Mercator Effect”, explaining that the Mercator Effect contributes to the already prominent first-world centricity and unjust white supremacy of written history and understanding of the present. However,as research cited in this paper regarding the creation of maps explains, it is impossible to depict a spherical object as a two-dimensional image without some level of distortion, and it is up to the cartographer to decide which distortion is necessary to accomplish their map’s intended purpose. Furthermore, as displayed by 2020 studies "The Influence of Map Projections on People’s Global-Scale Cognitive Map: A Worldwide Study" and “The Influence of Web Maps and Education on Adolescents’ Global-Scale Cognitive Map”, it is not just the Mercator’s specific distortions that create cognitive distortions, but all maps that contribute to our view of the world. Therefore, this paper argues that the specific theory of the “Mercator Effect” fails to acknowledge the fact that it is not solely the Mercator Projection that creates inaccurate mental images of the world, but all projections. Specifically, I contend that there is little evidence in support of the “Mercator Effect” in the sense that it was originally proposed. Rather, all types of map projections come with a level of bias that distorts our perspectives of how we view the world.

Nebo, Kamsi

Institution: *MD - Bowie State University*

Discipline: **Physics/Astronomy**

Author/Contributors:
Kamsi Nebo,
Elijah Roberts,
India Edmondson,
Alvin Atuonah,
Cinaya McClean,
Dr. Dawit Hailu

Abstract Name: **On the Kinematics of Sneezing Droplets (Experimental Design and Implementation)**

The key to the mitigation of the spread of coronavirus disease such as COVID-19 is to understand how microbial pathogens travel once they leavethe source. Tracking the trajectories of viral particles as asymptomatic carriers sneeze, cough, and even speak would provide a very good picture of what measures to take to curb disease transmission.Under this CURE project, students of Physics 251 and Physics 271employed two-dimensional kinematic equations to investigate the trajectories of the particles leaving a simulated infected person.The novelty of this study is that we base our investigation on a single-particle approach where we follow trajectory of single particle instead of bulk movement of fluids. Using the height of the asymptomatic carriers as a controlling parameter, we assess the extent of infective range for a variety of solutions. It is worth mentioning that both groups of students, of 251 and 271, used their own recipes and method of data collection distinct from each another. As an extension of the simulation of the trajectories, 271 students used the collected data to produce computer-simulated visualizations of the individual trajectories using statistical mode approach.

Neff, Abigail

Institution: *FL - Jacksonville University*

Discipline: **Communication/Journalism**

Author/Contributors:
Erin Byrnes,
Abigail Neff

Abstract Name: **La Bella Vita: Rediscovering Community in a Post Pandemic World**

Following the 2020 COVID-19 pandemic, many students continue to struggle with engagement outside of online activity and the classroom, returning to pandemic comfort zones. In a smaller university community, such as Jacksonville University, and across a variety of majors, students self-selected to participate in a five-week study abroad program during the summer of 2022 on location in Southern Italy. The purpose of this video project is to creatively share undergraduate student stories about how participation in the Communication, Culture, and Amalfi Coast program reignited student participation through engaged learning, while fostering a sense of community among the group. This creative work explores student understandings of the influence of social components on individual learning and the effect these social learning communities have on student health and well-being. Through qualitative video interviews with the Jacksonville University study abroad participants, students share their cultural experiences, discuss observations, and explainthe personal growth that took place because of this program. Presented over a series of videos stories, this project is a compilation of student narratives focused on growth through personal experience and global understanding. This project was produced on the campus of Jacksonville University and on location in Southern Italy. Featuring in-depth interviews, digital content creation, and personal artifacts from the study abroad program, the participants explain how the experience changed their understanding and helped them reconnect to a vibrant engaged learning community. This project includes on-camera interviews and video content produced as part of an advanced communication course.

Nelson, Alex

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Public Health

Author/Contributors:
Alex Nelson

Abstract Name: **E-Cigarette Use Patterns among Young Adults between Rural and Urban Areas Over Time**

Young adults (YAs, 18-24 years) use Electronic Nicotine Delivery Systems (ENDS; e.g., e-cigarettes) the most compared to other age groups. ENDS is the most consumed tobacco products among this population. Rural areas have been disproportionately affected by tobacco-related health disparities than urban areas. However, there is a gap in knowledge about the differences in ENDS use patterns among YAs between rural and urban areas. This study aimed to (1) document ENDS use patterns among YAs and (2) compare ENDS use patterns among YAs across rural and urban areas over time. This secondary analysis used data from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a state-based telephone health behavior survey of U.S. adults. We estimated ENDS use trends over time using weight of the parent data set. To meet study parameters, the 2016 N=1237102), 2017 (N=1477726), 2018 (N=1636823) and 2020 (N=658286) data sets accomplished aim 1 and the 2018 (N=15174) and 2020 (N=15612) data sets accomplished aim 2. Rates of YAs who currently use ENDS, exclusively use ENDS, and who never smoked but now exclusively use ENDS steadily increased from 2016 through 2020. Between 2018 and 2020, the prevalence of current ENDS use among urban YAs remained constant at 11.0%, but its prevalence among rural YAs increased from 13.3% to 15.9%. The prevalence of exclusive ENDS use among urban YAs increased from 7.5% to 7.8%. However, its prevalence among rural YAs exhibited a greater increase from 8.6% to 12.6%. Similarly, while the prevalence of urban YAs reporting exclusive ENDS use increased from 5.7% to 5.9%, its prevalence among rural YAs exhibited a greater increase from 6.7% to 9.9%. The prevalence of YA ENDS use has increased across the nation, particularly in rural areas. There is a critical public health need for rural-, ENDS-specific cessation treatments for this population.

Nelson, Caroline

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Caroline Nelson,
Madison Rockey

Abstract Name: **Effects of Aromatic Prenal Chromene Oxime Derivatives on A375 Cancer Cells**

New anticancer drugs are in demand due to the undesirable side effects of preexisting drugs and the tendency of cancer cells to become resistant to highly effective treatments. Oximes are highly selective kinase inhibitors, which makes them ideal for drug design. Six aromatic prenal chromene oxime derivatives were synthesized and examined for apoptosis induction when tested on A375 human melanoma cells. The compounds were compared to etoposide and dimethyl sulfoxide as positive and negative controls for their ability to induce apoptosis. A375 cells were cultured in DMEM supplemented with 10% FBS and passaged onto glass coverslips in 6 well plates. 50 micromolar concentrations of each derivative were added to two milliliters of cells in supplemented DMEM. After 24 hours in culture in the presence of the derivative, DAPI and Caspase stain were added to each well. After 1 hour of staining, live cells were imaged and then fixed with 4% formaldehyde for 15 minutes. To determine the percentage of cells undergoing apoptosis, cover slips were viewed under a fluorescent microscope. Cells that appeared green were scored as undergoing apoptosis, while the cells that appeared blue allowed us to identify the total number of cells. We calculated the percentage of cells undergoing apoptosis after exposure to each derivative. All 6 derivatives increased the number of apoptotic cells, relative to the DMSO control. The compounds M-Prenal oxime, oxime benzoate, and oxime cinnamate seem to have the strongest effects, although none of them were as effective as an identical concentration of etoposide. We are working to improve the consistency of results and to determine the concentration dependence of each derivative. Our initial results suggest that chromene oxime derivatives have potential as anti-cancer drugs and can induce apoptosis in a human cancer cell line.

Nelson, Dane

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Dane Nelson,
Larkyn Soletski,
Jennifer Muehlenkamp

Abstract Name: **Patient Satisfaction for Suicide Care in the Emergency Department**

Self-inflicted injuries continue to be major public health concerns in the United States with 312,000 related emergency department visits in 2018 (CDC, 2022). Patients with self-inflicted injuries often report to the emergency department to seek help, where staff must accurately assess the patient's lethality and manage their care. Admittedpatients for self-inflicted injuries present variation insatisfaction across departments. Satisfactionis commonly rated lower in the emergency department compared to other units where they may have received care. (Hutchison, Brian et al., 2003). Patients who receive poor care during this time are not only more likely to report lower satisfaction but also may leave with an increased level of risk.The purpose of this study is to compare responses on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) of patients visiting the emergency department with self-inflicted injuries to patients visiting the emergency department without self-inflicted injuries. Permission to access the deidentified data from patients presenting to a local hospital emergency department between January 2021-December 2022 has been granted and we are awaiting the data. Continuous satisfaction variables will be analyzed using independent sample t-tests and Chi-Square analyses for Categorical Data. We expect patients who visit the emergency department with self-inflicted injuries to report less satisfaction on the HCAHPS than patients who visit the emergency department with other injuries. Implications of the results will be presented and shared with the selected hospital emergency department to guide care quality improvements.

Nelson, Jadyn

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Jadyn Nelson,
Andrew Haveles

Abstract Name: **Variability in Deer Mouse Diet With Habitat Type and the Implications for Future Food Utilization Influenced by Climate Change**

Climate change is projected to shift the range of biomes and subsequently the distribution of food resources within. Consumers are then faced with the challenge of following their primary food resources, utilizing different food resources, or face reduced survivorship. Deer mice (Peromyscus maniculatus) have a broad distribution across North America that includes multiple habitat types and boast a generalist diet that I predict will vary with food resource availability. I measured the cusp shapes and depth of valleys in the three molars ofPeromyscus maniculatusto determine if diet varies with habitat type. The results from this study will help project the effects of climate change on consumer diet ecology, which will be useful information for conservation efforts, land managers, and policymakers.

Neo, Benedict

Institution: *IA - Iowa State University*

Discipline: Mathematics

Author/Contributors:
Benedict Neo

Abstract Name: **WEPPR - An R package for the Water Erosion prediction project (WEPP)**

Soil loss in Iowa is estimated to lose the state $1 billion annually. The water erosion prediction project (WEPP) helps alleviate this issue by estimating soil loss due to water erosion allowing us to implement solutions to counter these effects, ultimately saving money. WEPP is the engine behind the daily erosion project (DEP, dailyerosion.org) which provides daily estimates of soil loss in Iowa, some surrounding regions, and watersheds. Unfortunately running WEPP for all of Iowa takes approximately 6 hours every day as the software takes all the historical data it has on the soil and land data in Iowa and produces a prediction for the current day. We would like to speed up this process by building a Gaussian Process model to emulate WEPP. In order to facilitate this emulation, we are constructing an R package, WEPPR, where users can upload WEPP files to WEPPR and obtain WEPP estimates instantly. This requires the construction of R functions that read in WEPP input files, transform those files to an appropriate format, and visualize results. With the construction of WEPPR and a Gaussian Process model, we will be able to expand DEP from Iowa to the United States and, possibly, worldwide.

Nese, William

Institution: *PA - Allegheny College*

Discipline: Chemistry/Materials Science

Author/Contributors:
William Nese,
Alice Deckert

Abstract Name: **Kinetic Analysis of the Effect of Crowding on Silver Nanoparticle Surface Bound N-hydroxysuccinimide Ester Reactions with Imidazole**

The attachment of proteins as recognition systems is important for both the function and the design of most biosensors. However, crowding at the surface can often affect surface reactions such as these. An understanding of how surface crowding affects the speed and extent of reactions commonly used to tether proteins to a surface is thus important. The kinetics of the reaction between solution-phase imidazole and a surface bound N-hydroxysuccinimide ester of 4-mercaptobenzoic acid have been investigated using surface-enhanced Raman scattering. The rate constant and extent of reaction were monitored as a function of the ratio of 4-mercaptobenzoic acid to benzenethiol, the latter of which acted as an inert spacer on the surface. Reactions on surfaces with increasing mole ratios of benzenethiol were found to go further to completion with approximately the same magnitude of the second order rate constant which was found to be 0.005 mM-1s-1.

Neumann, Brett

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Economics**

Author/Contributors:
Connor Garland,
Erica Kladar,
Qianlong Liu,
Brett Neumann

Abstract Name: **The Determinants of Income Inequality in Rural Wisconsin and Policy Implications**

Rural communities in Wisconsin are currently facing many economic challenges, namely high levels of poverty, declining population, lack of high-quality services, and poor infrastructure. These are issues that call for innovative and creative approaches and require prompt attention. This project is a collaboration of three faculty members at the Department of Economics at our institution. Our project has three main goals. First, we propose to measure regional, particularly rural, income disparities while identifying the main explanatory factors with American Community Survey data and quantile regression analysis. Second, we will examine and quantify the impact of entrepreneurship, growth of immigrant populations and access to broadband on rural incomes in Wisconsin. Third, we will offer insights and recommendations to Wisconsin policy makers. Our research findings will help assess economic needs and resources and provide policy options to address challenges facing rural communities.

Neumann, Sandra

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **FAN Abstract**

Author/Contributors:
Ryan O'Leary,
Lori Randall,
Laura Lee,
Sandra Neumann

Abstract Name: **Fostering Creative Inquiry on the Two-Year Campuses: A Discussion at the Confluence of Humanities, Sciences, and Academic Support**

As undergraduate research is a high-impact pedagogical practice, offering our students opportunities for meaningful and creative inquiry and guiding them as they undertake that inquiry is especially important on the two-year campus. Some of our students will graduate with an associate degree, meaning that this is the only chance they will have to do this work. Others will transition to four-year institutions, where they will need to be prepared for higher-level research when they arrive. At the same time, two-year colleges present unique challenges in supporting undergraduate research and embedding it into the curriculum. This panel will share some of the challenges faced by students, faculty, and staff in our two-year colleges from three perspectives—the sciences, the humanities, and academic support—then guide a discussion about strategies for meeting those challenges to enrich undergraduate research and creative inquiry. By bringing together these perspectives, we will examine undergraduate research on the two-year campuses at the confluence of the humanities, the sciences, and academic support with the goal of fostering creative inquiry and preparing our students to succeed in the next stage of their intellectual growth.

Neves, Manoela

Institution: *PA - Duquesne University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Manoela Neves *Isabella McCollum* *Alexis Throop*
Rana Zakerzadeh

Abstract Name: **Quantifying the Effects of Tissue Biomechanical Properties Using Fluid-Structure Interaction Analysis**

Developing computational models and predictive frameworks for biomedical systems is crucial to advancing research on pathological conditions, considering that certain in vivo studies are particularly challenging due to invasive procedures, and in some cases, improper diagnostic and treatment tools. One type of computational mode of analysis is known as a fluid-structure interaction (FSI) which is the Multiphysics interaction of a fluid flow with a deformable structure. In FSI both fluid and mechanical properties of the tissue are important factors and contribute significantly to the model predictions. Young's modulus and Poisson's ratio are two essential mechanical properties that are necessary to describe the elastic behavior of the tissue, however,wide range of elastic modulus values have been reported in the literature. This study aims to provide a better understanding of biomechanical properties that can be used to build computational simulations. We investigate the influence of tissue elasticity on the structural and fluid dynamic response of models, with application to human cardiovascular and phonation systems. Specifically, the interaction between turbulent glottal airflow in the larynx and vibrating vocal fold during phonation is simulated using a fully coupled FSI approach. We have also explored the interaction between the blood flow and arterial wall deformation in patient-specific abdominal aortic aneurysm models.The fluid flow is described by the unsteady, viscous, incompressible Navier–Stokes equation, and the dynamics of tissue is modeled by the Navier equation. Tissue is considered as a transversely isotropic material for which the stiffness parameters include the transverse elastic modulus and longitudinal elastic modulus. Parametric simulations are performed by systematically varying the transverse and longitudinal stiffness parameters. Important model predictions including flow rate, fluid pressure, maximum tissue displacement and spatiotemporal stress metrics, as well as the effect of the stiffness parameters on these output parameters are analyzed.

Newbury, Lilly

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
Lilly Newbury,
Kris Curran

Abstract Name: **Circadian oscillator proteins xBMAL1 and xPERIOD1 affect the metabolic shift during mesoderm differentiation Xenopus laevis animal cap ectoderm**

Most cells in adult animals keep time over a 24-hour period. This is known as circadian rhythm. Two important circadian genes associated with circadian rhythm are Bmal1 and Period1. BMAL1 is a transcriptional activator and PERIOD1 is a transcriptional repressor. Together, they are part of a negative transcriptional feedback loop that times approximately 24 hours. We hypothesize that in late blastula stage embryonic cells, xBMAL1 and xPERIOD1 coordinate inducing signals (activin) with changes in metabolism (REDOX state) associated with specification of dorsal mesoderm. To test this hypothesis, we injected xBmal1 or xPeriod1 guide RNA and CAS9 protein into single-cell Xenopus laevis embryos. Later, we isolated the roof of late blastula stage Xenopus laevis embryos (animal cap). The isolated animal caps were then treated with 50ng/ml activin to induce dorsal mesoderm. The change in REDOX state is detectable using Promega's REAL TIME GLO MT Viability Assay. When comparing untreated animal caps, xBmal1 KO animal caps had a higher reducing potential compared to control. Conversely, untreated xPeriod1 animal caps had a lower reducing potential compared to control. Activin treated xBmal1 KO animal caps were metabolically similar to activin treated control animal caps. xPeriod1 KO animal caps treated with activin had a lower reducing potential when compared to activin treated control animal caps. xBmal1 KO animal caps experienced a large decrease in REDOX state with activin treatment. Surprisingly, when comparing untreated and activin treated xPeriod1 KO animal caps we observed no difference in REDOX state. This result may indicate that repression of xPeriod1 expression may be involved in regulating the metabolic shift in the response to mesoderm induction. Therefore, we conclude that Bmal1 and Period1 play a role in the metabolic response to mesoderm induction.

Newman, Kayleigh

Institution: *VA - George Mason University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Kayleigh Newman *Joel Martin*

Abstract Name: **Effects of implementing a mandatory and consequential annual fitness assessment in a large county fire department: a case study**

Current evidence indicates firefighters may not possess adequate fitness levels to effectively perform their duties.The purpose of the study was to examine the effects of implementing a consequential fitness assessment within a fire department. Retrospective data regarding 1364 professional firefighters was examined (88% male, age:40.0±8.8yrs, years of service: 11.9±6.8 yrs) from 2019-2021. The data included a fitness assessment of maximum pull-ups (PL), maximum curl-ups (CU), maximum push-ups (PS), and aerobic capacity, which was measured through the application of a 3-minute step test (3MST). Analyses were conducted to compare the effect of exam year, age, and sex on the fitness components measured.There was a significant small effect of exam year on PL($F(2, 2848)=5.92$, 0.01,$\eta2=0.003$), CU ($F(2, 2848)=17.57$, 0.001,$\eta2=0.01$) PS ($F(2, 2848)=18.50$, 0.001,$\eta2=0.01$) and aerobic capacity ($F(2, 2848)=26.19$, 0.001,$\eta2=0.02$). Post-hoc testing revealed that generally departmental performance onfitness assessments improved over the 3-year period. Older firefighters had significantly worse on performance on all measures of fitness except for aerobic capacity (p=0.185). Males outperformed females on all fitness assessments except CU (p=0.288).The results suggest the implementation of a consequential fitness assessment may be a plausible method for fire departments to support the fitness of firefighters. Since age and sex differences were observed, fire departments should consider these factors when interpreting fitness assessment scores and exercise training interventions. Although there was a significant difference between fitness measures by exam year, it's not evident whether the fitness changes lead to increased performance of occupational tasks as this was not measured in the study. Future research should explore whether changes in fitness lead to meaningful improvements in firefighting in terms of the ability to perform occupational tasks, timeliness, injury rates, and overall effectiveness.

Ngian, Ivan

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Physics/Astronomy

Author/Contributors:
Ivan Ngian,
Steven Verrall

Abstract Name: **Magnetic moment of deuteron quark-gluon plasma**

A deuteron is a proton fused with a neutron. Recent deuteron quark-gluon plasma experiments indicate an hourglass structure. This project proposes that the quarks decouple from the Higgs field in a deuteron quark-gluon plasma. The massless charge is then assumed to form two interacting oppositely-charged surfaces. The positively charged surface is an hourglass shell. The negatively charged surface is a torus shell wrapped around the hourglass neck. The structure's stability is assumed to be provided by electrostatic attraction balanced by magnetic repulsion. This implies that the strong interaction transforms into electromagnetic interactions. This proposed deuteron model is an extension of a recently published proton model based on the circular Unruh effect, zitterbewegung effect, quantum electrodynamics, classical electromagnetism, and quantum chromodynamics. A magnetic moment, equaling that of a proton is assumed to be generated by each of the hourglass lobes. The neutron's magnetic moment is supposed to dissociate into two pieces. These are one hourglass lobe and the negatively charged torus. It will be shown that a small misalignment of the hourglass relative to the torus can explain the deuteron's magnetic moment. The amount of misalignment can be directly related to the deuteron's mass-energy distribution. This project involves algebra and calculus that can be understood by undergraduate physics students. The long-term goal is to apply this method to modeling larger nuclear structures.

Ngove, Zefanias

Institution: *IA - Wartburg College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Zefanias Ngove,
Gretchen Guetzlaff,
Chaitrali Reddy,
Dr. Sean T Coleman

Abstract Name: **Isolation, Characterization, and Host Range of Novel Microbacterium foliorum Bacteriophages**

Abstract Bacteriophages are viruses that thrive by infecting bacteria, using the host to replicate, and ultimately killing the host. Bacteriophages are essential viruses, and they can be found in different ecosystems and living organisms. Studies on bacteriophages have shown that these organisms have the potential to treat antibiotic-resistant bacteria, given their ability to infect and disrupt a variety of bacterial cells.3 Phage therapy has been a subject of interest in the medical field since the end of WW2, and clinical trials are being conducted to further understand the phage's antibacterial properties. This research focused on bacteriophage isolation, identification, and a host-range test. DNA extraction and sequencing were performed on three out of five phages, and transmission electron microscopy was also performed to identify the family type to which all five phages belonged. Since the phages were collected from different places, upon their successful isolation and purification, their lysates were diluted to the same titers for the host range test to reveal each phage's potential to infect different Microbacterium species, Staphylococcus epidermidis, and Escherichia coli. We found that the five phages have differing host ranges; some also infect S. epidermidis. Genome annotation of the phages Cedar Bank, Extercus, and Guetzie will reveal further information on why each phage has its unique host behavior toward different Microbacterium. Furthermore, genome annotation will also be used to analyze the spike protein, which allows the phages to adsorb to their host species. The genomes of the Microbacterium species will also be compared to elucidate what makes some species more susceptible to different phages, in this case, the Cedar Bank, Extercus, and Guetzie. Further testing is still needed to determine the isolated phages' potential uses.

Nguyen, Anna

Institution: *CA - University of California - San Diego*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Anna Nguyen

Abstract Name: **Amyloid-Beta (A?) Plaque Deposition in the Human Eye for Alzheimer's Disease (AD) Diagnosis**

The aggregation and deposition of the Amyloid Beta peptide (Aβ) plaques are a hallmark of Alzheimer's disease (AD). Aβ is detectable through polarized light microscopy in the eye's retina, however, it is a problematic imaging target due to its posterior position in the eye. Recent studies have shown Aβ microaggregates deposit in the eye's lens, a more accessible imaging target, pre-symptomatically. There are two significant forms of Aβ: the 42-residue (Aβ42) and the 40-residue (Aβ40). The primary difference between Aβ42 and Aβ40 is the amino acid sequence which changes its secondary structure and aggregation mechanisms. This project focuses on collecting current literature data on Aβ's linear to reverse calculate the expected refractive index difference from various tissues. The data collected revealed the refractive index difference of amyloid beta deposits is roughly in the order of 1E-2, similar to a prior study involving collagen. As a result, when light passes the two materials there will be minimal scattering and refraction. The amyloid can be on a nanometer to micrometer scale similar to the dyes used to enhance its birefringence since the effects of amyloid by itself are difficult to detect. Through these calculations, it was possible to create a target of what emerging optics and nanophotonics technologies could overcome: the weak birefringence of Aβ deposits. The polarization properties and light-matter interactions of Aβ deposits can be implemented for quantitative, colorimetric, and non-invasive detection of Aβ plaques and ultimately assist in creating innovative diagnostic and prognostic modifications to existing ophthalmoscopes.

Nguyen, Bao

Institution: *AR - Arkansas State University*

Discipline: **Mathematics**

Author/Contributors:
Bao Nguyen

Abstract Name: **Development of Shiny Web Application of Multiple Testing Procedures Based on Covering Principle**

Statistical multiple-testing problems have arisen in a variety of research areas. In clinical trials, researchers want to study multiple objectives simultaneously. We proposed a novel covering principle to construct multiple testing procedures from the perspective of rejection regions in the sample space, which is different from the closed testing and the partitioning principles working in the parameter space. It has been proven that multiple testing procedures based on the covering principle strongly control the familywise error rate if the type I error is strongly controlled in each decomposed subfamily. Strong control of the familywise error rate for a multiple testing procedure is mandated by the US FDA in all confirmatory clinical trials. Computer simulation shows that our new method rejects more hypotheses on the primary endpoints in most scenarios compared to both the graphical and the gate-keeping approaches. This research project has developed several computer algorithms in R Studio to implement the covering principle in the construction of powerful multiple-testing procedures. Furthermore, a Shiny web application with a graphical user interface (GUI) has been developed. Equipped with our Shiny web app, any user can build the objective-tailored multiple testing procedure based on the covering principle by a smart phone or a tablet with a web browser without carrying out the mathematical calculation by hand or learning software languages. Therefore, the new method can be easily used in many other research areas when multiple comparisons are needed. For example, one can compare different demographic groups in terms of their attitudes toward the issues of interest in the social and behavioral sciences. In marketing research, one can compare a number of new advertisement methods with an existing one to decide whether one of the new methods is better than the existing one.

Nguyen, Giaolong

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Dylan Jackson,
Giaolong Nguyen,
Cassandra Hoxie,
Evan Delveaux,
Hallie Hughes,
Darius Fieschko

Abstract Name: **Modine Capacitive Liquid Level Sensor**

The purpose of this project is to create a capacitive liquid level sensor that will be equipped in automotives created by the Modine Manufacturing company. The Modine Manufacturing company would like to replace their current liquid level sensor with a new one that is more cost effective and has additional features. The current sensor costs Modine over eighty dollars per piece. The current sensor's only waterproofing is a sticker that must be removed to calibrate, and the sensor has no CAN communication. Modine would like our team to design a drop-in replacement for this sensor that has better waterproofing, CAN J1939 communication, and can be produced in house. The team is utilizing a pre-existing integrated circuit to save space, money, and time in the final design. Since the team will be implementing software calibration, we will be able to forgo openings for physical calibration and end with a far more water-resistant device. Much of our electronic design is complete and being followed closely by development in other areas of our project. The design of our power electronics is complete. Programming of the current IC, design of the sensor's internal PCB, and integration of CAN communication are all well under way. There are prototype devices being worked on and the group will soon be sending out Gerber files for final construction of our printed circuits.This device will be able to accurately measure and relay quantities of coolant inside automotive coolant tanks while remaining robust enough to resist liquid damage. It will be inexpensive to produce and feature up to date vehicle communication protocols.

Nguyen, Hoang Thien Ngan

Institution: ***SD - University of South Dakota***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ngan Nguyen,
Bhargavi Srija Ramisetty,
Michael Zhuo Wang

Abstract Name: Distribution of an Anti-Leishmanial Miltefosine between Blood Plasma and Brain

Leishmaniasis is a parasitic disease caused by Leishmaniaspecies and transmitted by infected sandflies. Infection of human internal organs results in visceral leishmaniasis, which is almost always fatal if left untreated. Miltefosine (MTS) is an alkylphospholipid compound and the only approved oral anti-leishmaniasis drug. Studies showed that MTS had a slow absorption rate, long half-life, and high volume of distribution. These unusual pharmacokinetic (PK) properties necessitate better understanding of the distribution of MTS in different organs. This study describes the determination of tissue partition coefficient (Kp) value for MTS, which is an important PK parameter governing the tissue distribution of a drug at steady state. First, we employed an in-silico approach and estimated the Kp value using the Rodger and Rowland equation. To achieve this, the partition coefficient (logP) value of MTS was measured by the slow-stirring method. The procedure for logP determination was chosen with careful consideration of the critical micelle concentration and the surfactant nature of MTS. Next, we estimated the Kp value using the unbound fraction (fu) approach and performed in vitro rapid equilibrium dialysis to determine fu values using mouse plasma and brain tissue homogenates. Furthermore, we compared the Kp value of 5.20 obtained from in vitro method with the Kp value of 0.742 obtained using in vivo data. Results from in vitro methods showed at least 5-fold variation in comparison to the in vivo Kp value. This could be due to the pseudo steady-state achieved by a single dose in the in vivo study. Nonetheless, these estimated Kp values, either from in vitro or in vivo methods, will inform our physiologically-based pharmacokinetic (PBPK) model of MTS to predict tissue distribution and PK in general population, as well as special populations, e.g., diseased and pediatric.

Nguyen, Hong An

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Hong An Nguyen

Abstract Name: Under-ice light and nutrient limitation of attached primary producers and phytoplankton

Eutrophication is the natural process of lakes becoming richer in nutrients and organic matter over time. However, human activities on land increase the transport of nutrients into lakes, accelerating the rate of eutrophication. This phenomenon will also lead to massive algal blooms, especially Cyanobacteria harmful algal blooms. Cyanobacteria is a common primary producer in aquatic habitats. In eutrophic lakes, however, they produce toxins that are harmful to people, pets, and the aquatic food web, contributing to fish kills and the formation of anoxic dead zones. Eutrophication and algal blooms are causing water quality declines across the globe. Most studies focused on lake nutrient limitation patterns in the growing seasons, leaving the role of primary production under the ice in worsening water quality questionable. Recent research shows that phytoplankton, including cyanobacteria, still grow in the winter under ice-covered conditions. Ice also creates an additional habitat that primary producers grow on to increase access to light. Nutrients, specifically nitrogen, phosphorus, and silica, and light availability differ under the ice in ways that may favor taxa that are associated with poor water quality.This study focuses on measuring the growth of primary producers growing attached to the ice and in the water under different nutrient and light conditions in Lake Menomin. This is a hyper-eutrophic reservoir in centralwestern Wisconsin. The paper will identify which habitats support more primary production and what environmental factors are limiting phytoplankton growth under the ice. These insights are the first step towards determining if water quality management needs to consider the under-ice phenomenon.

Nguyen, Jimmy

Institution: ***IA - Kirkwood Community College***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Jimmy Nguyen,
Fatima Toor

Abstract Name: Fourier Transform Infrared (FTIR) Spectroscopic Analysis Human Tumor and Healthy Tissues

Fourier Transform Infrared (FTIR) spectroscopy is a method of seeing chemical changes on a molecular level.1 The use of FTIR Spectroscopic techniques for analyzing biological tissues has been rapidly expanding. In this work we focus on the 2.5-3.7 mm (2800 cm-1 to 4000 cm-1) spectral region where C—H (methyl), O—H (alcohol), and N—H (amide) exhibit absorption signatures. We show that absorption around 3-um is greater in tumor tissue compared to healthy tissue. The higher absorption in tumor tissue shows that we could selectively ablate tumors, for example, by lasers emitting radiation at 3-µm, enabling significantly less damage to healthy tissue and possibly faster recovery post laser surgery and improved patient outcomes. Applying multivariate data analysis techniques such as Fourier deconvolution or second derivative spectroscopy can help differentiate overlapping peaks.2 By continuing to build a spectral library of various human tissue samples will help in the development of a hand-held laser sensor for a surgical drill.

Nguyen, Kendra

Institution: ***CA - SETI Institute***

Discipline: Physics/Astronomy

Author/Contributors:
Kendra Nguyen,
Douglas Caldwell,
Joseph Twicken,
Stephanie Striegel,
Rosemary Williams

Abstract Name: Reading Between the Lines: Identifying TESS Exoplanet Candidates

The Transiting Exoplanet Survey Satellite (TESS) builds on the work of the Kepler Mission to discover new planets transiting nearby stars. Since its launch in 2018, TESS has identified over 200 exoplanets and a total of over 5000 exoplanet candidates. With the conclusion of the Prime Mission, TESS began its extended mission in 2020 with the goal of observing 20,000 selected targets at 2-minute cadence per sector; up to 1,000 targets at 20-second cadence per sector; and 10-minute full frame images. We sought to analyze these 10 minute full frame images for potential exoplanet candidates and now report the detection of 20 new objects of interest. These objects of interest were distilled by searching the light curves produced by the TESS Science Processing Operations Center pipeline for TESS Sectors 48 through 50, observations of the Northern hemisphere. In total, 9257 Threshold Crossing Events (TCEs), which are periodic exoplanet transit-like dips in the light curve, were found. Then, the program TESS-ExoClass was used to run diagnostic tests on the TCEs, resulting in a list of probable candidates to be manually vetted. The manual vetting process involved reviewing the results of the diagnostic tests performed by TESS-ExoClass, transit light curve modeling, a comparison against various catalogs to ensure that the targets had not already been identified, and reviewing other sectors in which the TCEs were detected by TESS-SPOC. Our compilation of 20 promising exoplanet candidates have been submitted to the Exoplanet Follow-up Observing Program as Community TESS Objects of Interest. The target pixels, light curves, and data validation reports are available on the Mikulski Archive for Space Telescopes (MAST) for community use.

Nguyen, Lan

Institution: ***OK - University of Central Oklahoma***

Discipline: Art/Music History

Author/Contributors:
Lan Nguyen

Abstract Name: Blooming, Beautiful, Baroque

The Baroque period started around the 1600s and ended around the 1750s. This period consisted of lavish, ornamental, and decorative designs. The most prominent design that affected graphic design would be typography, engravings, and book production. Romain du Roi was the most influential typeface that was created for the French king Louis XIV. Baskerville, Fournier, and other typefaces were influenced by Romain du Roi. Copperplate engravings made a massive impact on book production as well. Most engravers would pronounce their hand skills by creating their own books with illustrations and text. Engravers took a lot of time perfecting the fine lines, details, and legibility. Book production also had multiple printers and engravers cooperate in making a book. Most of the books would have an essence of baroque characteristics. The connection between typography, engraver, and book production conveys the impact the baroque period had on graphic design.

Nguyen, Regina

Institution: ***TX - Southern Methodist University***

Discipline: Environmental Studies

Author/Contributors:
Regina Nguyen *Odran Fitzgerald* *Collin Yarbrough*
Janille Smith-Colin *Jessie Zarazaga*

Abstract Name: Developing A Community-Engaged Design Framework for Community Environmental Justice Efforts

Due to information accessibility and lack of technical resources, disenfranchised communities risk being spoken over by protective agencies in environmental justice (EJ) efforts. However, academics can use community-engaged research methods to understand the afflicted population's needs and vision for remediative action. In previous academic-community collaborations, methods emphasizing stakeholder participation have shown to encourage residents to think creatively about their needs and potential solutions by allowing participation in the design process. This study evaluates the benefits of allowing community members greater control in design decisions by collaborating with a community in Garland, Texas concerned with their neighborhood's history of industrial pollution and possibly-related epidemiological concerns. Over the course of the study, the research team developed a new design framework geared towards enabling citizen autonomy after short-term community-academic partnerships. This framework modified the traditional design thinking (DT) process by increasing the frequency of "choice points" which allow stakeholder feedback to alter the product during all stages of the design process. Ethnographic interviews were used to collect community perceptions as site conditions evolved. Then, insights derived using qualitative data methods were used to drive the design process. By the end of the study, use of the framework resulted in multiple product prototypes for community use and a positive relationship with the citizens involved in the EJ effort. Moreover, retrospective stakeholder feedback It is expected that applications of the design framework in other EJ sites and disciplines will contribute to continuing research efforts to establish ethical and equitable methodologies for community-engaged and community-based work.

Nguyen, Shayla

Institution: *OK - Oklahoma State University*

Discipline: Biology

Author/Contributors:
Jesse Hurd *Shayla Nguyen* *Casey Sergott*
Emmy Fowler *Dale Kelley* *Elizabeth McCullagh*

Abstract Name: **The Effects of Pair Bonding and Monogamy on Gonadal Characteristics and Cauda Epididymal Sperm Count in Prairie Voles (Microtus ochrogaster)**

Prairie Voles are a social, monogamous species which have gained traction in the fields of neurobiology, neuroendocrinology, and psychology as a potential model species for studying human social behavior and associated biology, due to similarities in brain chemistry and social tendencies as well as the similarities between rodent and human physiology. Reproductive work in prairie voles is somewhat limited, with more emphasis placed on behavior than physiology. The female prairie vole estrus cycle is unique in that the females do not begin estrus cycling until exposed to a non-relative male. It is unknown if/how female exposure and pair bonding affect male sperm characteristics and/or production. Here we utilize male prairie voles as a study model for if/how pair bonding, potential sperm competition, and monogamy affect sperm production and characteristics. Prior to comparing sperm characteristics between these groups, we established an effective methodology for epididymal sperm extraction utilizing established techniques in other rodents, modern theriogenology concepts, and trial and error. This methodology displays statistical significance and consistency based on established reproductive parameters in mammals, and is thus appropriate to utilize for study group comparisons moving forward. We now turn our attention to the differences between unmated males, mated monogamous males, and males exposed to a variety of sperm competition. Preliminary data indicates a statistical difference in sperm characteristics between unmated males and mated monogamous males, but more data is needed to reach an objective conclusion. This study will contribute to a better understanding of the relationship between monogamy, sperm competition, and pair bonding and their effects on reproductive physiology.

Nguyen, Stephanie

Institution: *MN - St. Catherine University*

Discipline: Biology

Author/Contributors:
Stephanie Nguyen,
Kellie Agrimson

Abstract Name: **Editing Rasd1 and Cdk1na in a Cell Culture System**

In sexual reproduction, both sexes require functional sexual organs to produce offspring. Problems with germ cell differentiation and development are associated with infertility. Interestingly, males experience infertility at a similar rate to women. This study aims to create a molecular tool box to identify genes important for proper spermatogenesis in mouse primary spermatogonia stem cells and a testicular cancer human cell line using CRISPR/Cas9–a gene editing technology that modifies, cuts, and deletes targeted regions within genomic DNA. Through our work, weare interested in Rasd1, a gene that encodes for cell morphology, and Cdkn1a, known for controlling cellular proliferation. Our lab designed primers utilizing multiple bioinformatics databases to amplify the genes of interest and made specific single guide RNAs (gRNAs), which will signal to Cas9 where to cut the genomic DNA and produce a frameshift mutation. Thus far, we have verified our primers using PCR and gel electrophoresis, isolated and cleaned up the product, and are testing CRISPR/Cas9 in vitro. Once confirmed, our aim will be to electroporate CRISPR/Cas9 into cell culture and investigate changes in gene expression using quantitative RT PCR.

Nguyen, Timmy

Institution: *CA - California State Polytechnic University - Pomona*

Discipline: Chemistry/Materials Science

Author/Contributors:
Timmy Nguyen *Joanna Feng* *Nathalie Nalbandian*
Thomas Osberger

Abstract Name: **Synthesis of Substituted Isatins as Potential Antibacterial Agents**

The decline in the development of new antibiotics, combined with their overprescription against bacterial pathogens, has resulted in an increase in the antibiotic resistance cycle and accounts for much of the hospitalized-infection rates. Therefore, this represents an urgent health priority in the synthesis of novel antibiotics. Our research focuses on the expansion of substituted indole-1H-2,3-dione derivatives, most commonly known as isatin. Isatin is a heterocyclic compound with significant synthetic versatility for its highly reactive C-3 carbonyl group and N-1 amino group, whose derivatives can serve as a precursor for potential antibiotics and pharmaceuticals. The unique properties of isatin's structure lend it to perform a broad variety of structural modifications to synthesize structurally diverse derivatives and yield a large spectrum of biological activity that are dependent on the substituent properties. Many of the synthetic routes involve substitutions at positions C-3, C-5, C-7, and N-alkylation reactions. Previous studies have observed the greatest antimicrobial activity when substituting electron-withdrawing groups at the C-3 and C-5 positions due to the increase in the overall lipophilic character to facilitate transport across the hydrophobic membrane. We synthesized a library of substituted isatin derivatives to investigate how substitutions on the C-3 carbonyl and the bromination of the aromatic moiety at the C-5 and C-7 positions can affect the antibacterial properties. These derivatives involve Henry reactions, Grignard reactions, Hydroxyalkylation, and Schiff base formations through modifications on the C-3 carbonyl of isatin, 5-bromoisatin, and 7-bromoisatin. Each compound's identity was verified through NMR to ensure the success of the synthesis. We have successfully synthesized and identified 13 isatin derivatives, with product yields ranging from 51% to 90% yield. The synthesized compound library will be screened againstE. colito measure the potential antimicrobial activity.

Nguyen, Trish

Institution: *TN - University of Tennessee at Chattanooga*

Discipline: Biology

Author/Contributors:
Trish Nguyen,
J. Hill Craddock

Abstract Name: **A small stem assay using hypovirulent Cryphonectria parasitica to screen Castanea dentata backcross F2 families may set the stage for long-term survival**

By combining the results of blight resistance breeding and the application of hypovirulence as a biocontrol, populations of resistant hybrid trees could be deployed together with a less pathogenic strain of Cryphonectria parasitica (Murr.) Barr. I used a small stem assay to screen seedlings in thirteen half-sibling backcross F2 families with an attenuated strain of C. parasitica containing the Cryphonectria parasitica hypovirus-1 (CHV-1) Euro7 virus. The experiment was set up as a randomized complete block design in 2-gallon containers. Measurements of canker length and morphology were gathered at four, eight, 12-, and 16- weeks post-inoculation. A secondary experiment was conducted to further understand the in vivo effects of hypovirulence. Trees from five of the thirteen half-sibling families were inoculated with isogenic virulent (virus-free) and hypovirulent (virus-containing) strains of the fungus. Virulence of the virus-free (V) and virus-containing (H) strains was measured using the Granny Smith apple assay. The possibility of in vivo canker conversion from V to H was tested after five weeks by inoculating half of the V-infected trees with the H strain. Measurements of canker length and morphology were measured weekly for another five weeks post-inoculation. Data analysis for both portions of the project are ongoing. All surviving trees will be planted in an experimental orchard in Middle Tennessee to create a potentially long-lasting population of disease tolerant trees together with an effective, long-term biocontrol for chestnut blight.

Ngy, Phocheng

Institution: *KY - University of Kentucky*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Phocheng Ngy,
Jared Cochran,
Olga Tsyusko

Abstract Name: **Effects of Multiple Stressors on Caenorhabditis Elegans**

Silver Nanoparticles (Ag-NP) have been used extensively in products due to their antibacterial properties. During use and after disposal of such products, Ag-NPs are being released into soils. Invertebrates in the soil have an important role in breaking down large carbon sources and releasing nutrients that increase soil quality. Exposure to Ag-NP has been found to cause toxicity at low Ag concentrations in different soil invertebrates, including a model soil nematode Caenorhabditis elegans. In addition to NP, soil invertebrates are also being exposed to other stressors, such as Klebsiella pneumoniae, which is a common gram-negative pathogen found in soils and was shown to induce immune stress in C. elegans. There is plethora of studies examining toxicity of each of these stressors alone, there is lack of knowledge on the combined effects of these stressors in soil invertebrates. This study aimed to determine whether reproductive toxicity was enhanced after combined versus individual exposures of C. elegans to silver nanoparticles (or silver ions) and K. pneumoniae. To select the Ag concentrations for the combined exposures, the concentration response relationship for mortality and reproduction were identified first after individual exposures. To stay below 10% for mortality, the concentration of Ag ions and Ag-NP should not exceed 11 ug/L and 325ug/L, respectively. From individual reproduction experiments, we selected concentration that decreases reproduction by 30% (EC30), which corresponded to 11 ug/L and 275 ug/L for Ag ions and Ag-NP, respectively. The combined exposure at EC30 of C. elegans to Ag-NP (or Ag ions) and K. pneumonia can increase reproductive toxicity. The effect of AgNP on K. pneumoniae biofilm formation is currently being investigated. Thus, our results demonstrate that despite Ag antimicrobial properties, which should decrease K. pneumoniae pathogenicity, there is a synergistic adverse effect of Ag and pathogen on C. elegans

Nicastro, Ariel

Institution: *TN - Middle Tennessee State University*

Discipline: Physics/Astronomy

Author/Contributors:
Luke Gormsen,
Ariel Nicastro

Abstract Name: **Electrical ring resonator: Experiments and program development**

Since the large-scale commercialization of fiber optics in the 1970s, there has been an explosion in research to find ways to optimize and further its applicability.Primarily applied in the field of optics, ring resonators have been found to haveincreasing potential in such areas as photonic switching, signal filters, and optical sensing. Similar in its applicability, electrical ring resonator can be created to serve a variety of functions. In this research, electrical filters made from ring resonators were created both experimentally and computationally. The filter was built in a physics laboratory by using co-axial cables connected in various configurations with different numbers of cable rings join to a straight signal cable path. The filter properties were measured by an impulse method using a frequency generator and an oscilloscope. The extracted data from the oscilloscope are analyzed computationally to determine the characteristics of frequency transmission for each configuration.Additionally, thecomputational model developed allows us totest various configurations of ring resonator structures by employingthe transfer matrix method. This allows us to compare the experimental values with expected computational values and enablefuture researchers to test increasingly complex resonator structures that are too difficult to create in the lab.

Nichols, Leon

Institution: *NY - Colgate University*

Discipline: Physics/Astronomy

Author/Contributors:
Leon Nichols,
Ken Segall,
Miriya Pinkerman,
Daniel Bernstein,
Denzel Bullen,
Sarah Miller

Abstract Name: **Neuromorphic Computing with Josephson Junction Neurons**

Josephson Junctions are superconducting circuit components whose behavior can be described by a second-order, non-linear differential equation. This makes them an ideal tool for exploring and modeling complicated systems, such as neurons. This abstract gives the background for studying fluxon dynamics (the behavior of a quantized amount of magnetic flux) in Josephson Junctions arrays and the possibility of demonstrating learning in a neural circuit. When cooled below TC, current loops in the array can cause fluxons to become trapped between junctions in the array. At a certain switching current, Isw, or thermal energy level, a fluxon will begin to move around the array, and a voltage is detectable. Isw, however, can vary significantly. It is strongly suspected that this variation is caused by production uncertainty in the size of the junctions, akin to a particle moving over hills of different sizes. Macroscopic quantum tunneling of fluxons is also a suspect for these variations. The demonstration of learning involves splitting artificial neuron spikes down two different “axons” composed of more Josephson Junctions and observing the difference in arrival time of these spikes to a “learning gate” composed of an inductor and a SQUID. What we are able to observe here is called spike-timing dependent plasticity (if the spikes are close, the coupling strength is increased and vice versa). In simulations, unsupervised learning and pattern recognition have been successfully demonstrated. Our experimental results match thus far.

Nickell, Madeline

Institution: *MN - Hamline University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Madeline Nickell,
D'Angelo Perez,
Urvashi Gangal,
Kathryn Malody

Abstract Name: **Seed Treatment by a Cold Plasma**

Food quality and production is a growing issue with an increasing world population, which has led to the involvement of the plasma agriculture field in the search for a solution to these problems. The field has expanded the spheres of disease control and growth stimulation, with the ability of plasma to safely kill pathogenic bacteria, fungi, and viruses. The purpose of this project was to determine the effects of cold-atmospheric plasma (CAP) on the seed performance of three plants when exposed to a pin to water discharge cold atmospheric pressure plasma, plasma that is ignited by air gas between a tungsten electrode pin and a water surface, and watered with plasma activated water (PAW) respectively: Arabidopsis thaliana, Brassica rapa, and Lactuca sativa. Brassica rapa seeds showed a significant increase in water uptake after being treated with a cold-atmospheric plasma jet for 1000 seconds with 95% confidence. Lactuca sativa seeds, which have a softer seed coat, did not show an increase in water uptake after CAP treatments, indicating that CAP treatment may affect seeds differently with varying seed coat types. CAP treated Brassica rapa plants showed significantly taller growth than their control at every measuring period except at 18 and 21 days after planting, along with CAP treated Arabidopsis thaliana plants showing significantly taller growth than their control after 16 days of planting, at a 95% confidence interval.This further indicates that CAP treatment was the most effective plasma treatment for improving plant performance, but affects varying seeds in different ways, most likely due to differences in their seed coats. Furthermore, CAP does not produce dangerous by-products, nor does it require wasteful or precious resources, making it a promising green technology for the agricultural industry.

Niehoff, Marissa

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Marissa Niehoff,
Miikayla Schuebel,
Charlotte Clark

Abstract Name: Fostering collaboration between parents and speech language pathologists : What impact do motivational interviewing strategies have on parent-child reminiscing intervention?

The literature on parent-child reminiscing conversations from the various disciplines, including developmental psychology and communication sciences and disorders, indicates that these brief and routine conversations about shared, past experiences can have a positive impact on a child's developing language, cognitive, and socio-emotional skills. However, families can reminisce in a variety of styles depending on their culture. Motivational interviewing is a counseling style that aims toguide clients toward developing their own solutions as grounded in their personal values and priorities. With our project we ask the question, "What impact do motivational interviewing strategies have on the collaborations of parents and clinicians of different cultural backgrounds during reminiscing interventions?" To answer this question, we have thus far recruited two families- onemonolingual English speaking family with a preschooler diagnosed with a language delay.; onebilingual family (English and Japanese) with an adolescent boy diagnosed with ASD and TBI. We are video recording our collaborations and parent-child reminiscing. Inductive methods of analysis are employed to identify behaviors that contribute or interfere with effective collaboration between the clinician and parents. Collaboration methods will be refined after initial analysis and additional families recruited for further study. Understanding ways to foster better collaboration with families is essential to creating individualized and culturally sensitive interventions.

Nielson, Alaina

Institution: ***UT - Utah State University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Alaina Nielson

Abstract Name: Unconventional Heroines: Rethinking Feminine Characters in The Three Kingdoms

The sixteenth-century Chinese novel The Three Kingdoms by Luo Guan Zhong offers an enchanting account of wardom, military strategies, dramas of life and death as well as contested gender roles in a patriarchal society. Although it mostly discussed the interactions of men, the novel offers riveting illustrations of unconventional heroines who managed to gain agency within the moralistic parameters of Confucianism. Some representative examples include: the well-known femme-fatale Diao Chan who plays a important role in the fall of Dong Zhuo, Xu Shu's mother who displays moral power through political chastity, Liu Bei's bride Lady Sun who proves to be a faithful, courageous, and resourceful wife. These particular women were brave, strategic, and quietly powerful. Amid the novel's rich depictions of political alliances and deceiving military strategies, these heroines display that gender is another battlefield for talent and skill amongst unconventional, gentry-class women. Though often depicted as minor characters, women have occupied an important status in the narrative space.

Nieto, Allison

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: English/Linguistics

Author/Contributors:
Akira Hasegawa,
Allison Nieto,
Winston Wu

Abstract Name: Computational Analysis of Pop Music Across Cultures

Songs are heavily influenced by culture. This project focuses on finding similarities and differences in both the lyrics and chords of popular songs in Spanish, English, Japanese, and Chinese. First, we collect a database containing the songs' title, lyrics, and artists by scraping several online websites. We then analyze the lyrics of the songs, performing sentiment analysis and analyzing other psycholinguistic categories on the songs as a whole and also as a word usage time series. Using clustering and topic models, we identify commonalities in songs across languages. This project also includes a chordal analysis to determine whether there are common chord structures and key signatures that are inherent to a specific culture's music. The result of this analysis provides an exact cultural interpretation of the lyrics for non-native speakers.

Nitka, Michaela

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Elizabeth Buran,
Michaela Nitka

Abstract Name: Carbon Capture by Icelandic Basalts: A Potential Way to Address Global Climate Change

Many ecosystems can only survive in a very slim temperature range, but our increased use of greenhouse gasses, such as CO2, change global temperatures significantly. This results in those ecosystems dying off, like coral reefs for example. Iceland currently has one of the largest carbon capture plants in the world. They have implemented a way to take CO2 from the atmosphere and pump it underground.The research question we will be answering with our project relates to carbon capture. We will be exploring how carbon can be contained within bedrock through multiple experiments and observation of basalt samples. We collected olivine and basalt samples fromthe Fagradalsfjall volcanoin Iceland. The collected samples were micronized and analyzed with a powder x-ray diffractometer (PXRD) before being exposed to dissolved CO2. Preliminary results show no change in mineralization after 31 days. This is unsurprising, as a study published by researchers in Iceland showed significant mineralization after running experiments for upwards of 140 days. Future steps include letting the two existing samples continue to react with the carbonated water, as well as running an additional experiment. This set-up is designed to continually measure pH and CO2 levels in a closed system. We will also use a scanning electron microscope (SEM) to look for any changes on the sample surfaces before and after this set-up. This experiment will attempt to minimize human error while collecting as much data as possible that would indicate mineralization.The contributing factor of our research would be assisting in ways to lessen climate change. As we know CO2 is a greenhouse gas which largely contributes to the warming of the earth. With scientists discovering new ways to contain CO2, we have the potential to slow global warming.

Niyen, Nathan

Institution: ***IA - Iowa State University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Nathan Niyen

Abstract Name: **Acculturation of Children**

Migration can be a large shift in a child's life, affecting their mental psyche. Studying this impact through the lens of acculturation to see how well a child can adapt to Western Society can provide? Acculturation is when immigrants from one culturetry to integrate into another by taking in the characteristic of another culture. Berry's model of acculturationis the different ways an immigrant can acculturate through assimilation, integration, marginalization, or separation. The parent of the child has an impact on how the child acculturates, also depending on which characteristics the parent uses in the parenting model. The way a child acculturates will influence the child's wellbeing. This research hypothesizes that parenting style affects a child's acculturation, which in turn affects a child's wellbeing. Another area to examine is how cultural intelligence and empathy affect how a child acculturates, which can also affect a child's wellbeing. Cultural intelligence is when a person understands another culture's norms, practices, and conventions. At the same time, cultural empathy is the capacity to understand experiences from different cultures. We hypothesized that cultural intelligence and cultural empathy affect how much a person acculturates, which leads to their wellbeing. These hypotheses were tested using a Qualtrics survey and a set of questionnaires. The target demographic is people over 18 years old who moved to the United States before 14 years old. We believe that parents with authoritative characteristics will lead to a child having an integration type of acculturation and a higher wellbeing. I integration acculturation will lead to a child having a higher cultural empathy and intelligence and higher wellbeing. As the world becomes more and more connected, this research will contribute to understanding the experiences of children who migrate.

Noble, Mary

Institution: ***VA - Virginia Commonwealth University***

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Mary Noble

Abstract Name: **That Girl vs. New Girl: The Perils of Choice Feminism**

In recent years, Elizabeth Meriwether's television show New Girl has begun to reach the status of a cult classic. The show's sharp humor and quirky protagonist have captured the hearts and minds of many. But is this all for the good? New Girl features a controversial protagonist, Jessica Day, whose personality grates on some and resonates with others. Jessica represents stereotypically feminine interests and ideals yet takes on a leading role and independence not always afforded to female characters. This opens her, and the larger show, up to feminist readings and critiques. Surprisingly, little scholarly research has been conducted on New Girl. In my paper, I examined the feminist implications of the show. I researched choice feminism and investigated its manifestations within New Girl. I compared and contrasted New Girl with the 1960s television show That Girl, to consider how both shows reacted to and exemplified the feminism of their times. I explored the similarities and differences between the shows and determined what this meant for New Girl's politics. Through my research, I determined that New Girl amplifies harmful aspects of choice feminism, a subsect of third wave feminism. The ways in which New Girl addresses feminism frames misogyny and oppression as a matter of personal responsibility, and ignores systemic issues and their impact. A show that is as culturally significant as New Girl has a wide audience, and the ideas presented within it will be spread. We can see this research as a call to more critically develop future television and media.

Nolletti, Lexi

Institution: *KY - University of Kentucky*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Lexi Nolletti *Darcy Adreon* *Bryna Vargo*
David Rodgers

Abstract Name: **Using Enzyme-Linked Immunosorbent Assays (ELISA) to Understand Insulin-Degrading Enzyme (IDE)-Phosphatidylinositol Phosphate (PIP) Lipid Interactions**

Insulin-degrading enzyme (IDE) has been linked to Alzheimer's Disease and Type II Diabetes due to its function in degrading insulin and the amyloid-beta peptide. IDE is, therefore, a potential therapeutic target for these diseases. This research aims to identify how IDE produced in the cell cytosol accesses its substrates, which are likely cleaved within the cellular endosomal system. It is hypothesized that some IDE localizes to endosomes by initially binding to phosphatidylinositol phosphate (PIP) lipids located in the endosome membranes. Computational docking studies suggested a site on IDE that might mediate an interaction with PIP lipid head groups. An enzyme-linked immunosorbent assay (ELISA) was used to evaluate whether mutations in this putative binding site disrupt interactions with artificial liposome membranes doped with PIP lipids. Results show that the mutations do affect PIP binding, with the variants IDER824A,H885A,R892A and IDEQ813A,N821A,H885A having reduced or no detectable interaction with liposomes bearing phosphatidylinositol 4,5-bisphosphate (PI(4,5)P2). This loss or reduction of PIP interaction supports the hypothesis that IDE interacts specifically with PIP head groups and that this interaction is mediated by the proposed binding site. Improved understanding of this mechanism could someday enable the development of therapeutics for AD and/or diabetes mellitus and explain why these diseases are frequent comorbidities. While studying IDE-PIP interactions it was also observed that PIP lipids can bind in the inner chamber of the clamshell-like IDE molecule. The lab previously obtained a crystal structure detailing this binding interaction. Future work will investigate the possibility of IDE having a second function as a lipid transfer protein, which the lab is beginning to explore using a liposome-based lipid transfer assay.

Nolley, Adaline

Institution: *VA - Liberty University*

Discipline: **History**

Author/Contributors:
Adaline Nolley

Abstract Name: **Women of War: The Role of Female Spies in World War II?s French Resistance**

World War II marked the first war in history where women were legally combatants, employed by government organizations. Great Britain's Special Operations Executive (SOE) was one such organization. When Nazi forces occupied France in the summer of 1940, Great Britain began the SOE with the intention of liberating France from the occupation Vichy Regime and defending against the German forces across the English Channel. In the years following the war, many stories of heroism emerged. These stories often involved the female spies whose major contributions were crucial to the eventual victory of the Allied Powers. While many of these stories remain untold, the roles of five women were widely publicized, dramatized, and celebrated around the world. Andree Borrel, Virginia D'Albert-Lake, Odette Sansom, and Betty Pack have become examples of the bravery, discipline, dedication, and quick-mindedness of the female warriors ofWorld War II. However, not all of these women worked exclusively for the French Resistance. Mathilde-Lily Carrè gave her loyalty to the Nazis, despite her role as a founding member of one of the SOE's key espionage circuits. Her role as a double agent also mirrors the stories of many other women. Though their methods were different from one another and the norm, the impact of each of these women was profound in the defeat of Nazi ideology and forces in France during the war. These women and many others who served in the Second World War proved the value of their skills, talents, and devotion to a cause through their work during World War II.

Noonan, Caroline

Institution: *TX - San Jacinto College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Caroline Noonan

Abstract Name: **Smell Ya Later (but hopefully not): Ammonia, Fish, and their Toxic Relationship**

Ammonia, NH3, is a common substance that has many encounters on a regular basis but are unaware of its impact on wildlife, particularly water dwelling species, such as fish. Ammonia is toxic and this component causes a multitude of problems upon human or animal contact. The primary objective of this project is to explore the structure of this compound, the impact of it on fish, their ways to negate the hazardous effects of ammonia, and the reason and importance of ammonia's existence. To understand how ammonia is regulated, its composition, creation, and relationship to these creatures is analyzed in this study. This information is relevant to how ammonia plays a greater role in natural processes that support aquatic life, such as the nitrogen cycle. Understanding how ammonia is created and enters in aquatic environments is the key to grasping the drawbacks and benefits of its part in the greater world. The research also extends to the analysis of ammonia content in water samples collected from different areas in Houston, Texas using ammonia test kit and pH tester.

Norbeck, Cassandra

Institution: *MN - St. Catherine University*

Discipline: Biology

Author/Contributors:
Cassandra Norbeck,
Kellie Agrimson

Abstract Name: **Investigating male infertility: Investigating genes important for spermatogenesis in a cell culture system**

Infertility affects 4.5-6% of North American males and up to 15% of couples worldwide. Infertility may be caused by unknown genetic factors, as up to 2,300 genes are pertinent to male fertility. This research project aims to create the molecular toolbox needed to evaluate gene function in male germ cells. We will use mouse primary spermatogonial stem cells and a human testicular cancer cell line to knock out the functions of genes Phosphoprotein 1 (Spp1) and Inhibitor of DNA Binding 4 (Id4) in the testis to determine the effect of the knockouts on male germ cell proliferation and cell death. We designed single guide RNAs (gRNAs) using online bioinformatic tools and amplified the genes from human and mouse genomic DNA to demonstrate the effectiveness of our gRNAs in vitro. These primers and Cas9 compose the beginnings of the molecular toolbox used to electroporate cultured cells. This research will contribute to the greater scientific community by providing insight into the function of Spp1 and Id4relating to male fertility and providing a methodology for future research.

Norcross, Isabella

Institution: *MN - St. Catherine University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Bella Norcross *Kimberley Persons*

Abstract Name: **Barriers and Facilitators to Mental and Behavioral Health in a Primary Care Setting**

Due to barriers including immigration status, acculturation, trauma, or generational conflicts, Hispanics/Latinos have difficulty accessing mental and behavioral health (MBH) services compared to non-Hispanic whites. To address this healthcare disparity, we wanted to identify best practices for forthcoming MBH services in St. Mary's Medical and Rehabilitation Therapies (SMMART) Clinic at St. Catherine University in St. Paul. The SMMART clinic serves an uninsured, predominantly Hispanic population and operates under a collaborative care model, referring to a primary care setting with several medical professionals from different disciplines. We conducted a rapid literature review. After compiling 1795 articles from six online databases, we narrowed down articles based on criteria including but not limited to: articles with clear research methodology, available in English, and not more than ten years old. Subsequently, we analyzed 28 full-text articles for different themes. The emerging themes included barriers (access, culture, racial bias) and facilitators (cultural relevance and collaborative care) for Hispanics/Latinos seeking MBH services. Noteworthy findings suggest that many Hispanics/Latinos somatize their symptoms (manifest psychological distress through physical symptoms), hence mental illness goes undetected by physicians. Hispanics/Latinos may also have difficulty accessing care because of cultural stigma of mental health disorders and racial bias from providers, among other factors that limit accessibility. Meanwhile, reviewed articles also suggested that many Hispanic/Latino patients prefer collaborative care models where communication between their primary care providers (PCPs) and MBH specialists is apparent, and care is culturally relevant. We hope to use our data to inform best practices for MBH care at the SMMART clinic in understanding how to make services more accessible to a Hispanic/Latino population. Still, future research is needed to address assessment and intervention.

Noriega Rodriguez, Ariel

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Biology

Author/Contributors:
Ariel Rodriguez *Sage DeLong* *Rafael Rodriguez*
Lauren Cirino

Abstract Name: **Monandrous females regain sexual receptivity after produce eggs**

Male fitness is a function of the number of mates they can inseminate, yet males often engage in prolonged copulations. Potential explanations for this behavior include the ejaculate transfer hypothesis, whereby longer copulations achieve higher levels of insemination, and the mate-guarding hypothesis, in which males increase their association with females for longer than required for sufficient sperm transfer. Interestingly, prolonged copulations can occur in monandrous species where these benefits presumably do not apply. We investigated prolonged mating in a monandrous-polygynous species, a member of the Enchenopa binotata complex of treehoppers (Hemiptera: Membracidae). These insects communicate with plant-borne vibrational signals and use male-female duets in pair formation. Copulation can last up to three hours. We tested a version of the mate-guarding hypothesis by which prolonged copulation has the function of allowing males to transfer ejaculate which reduces female receptivity and promotes egg laying. If so, females would be more likely to duet with male signals and less likely to produce eggs as mating duration declines. We randomly assigned receptive females to copulation duration treatments of either 10, 30, 45, or 60 minutes before we separated the pairs. We also included a control group where the pairs were not interrupted during copulations. We found that females that experienced copulations lasting 30 minutes or less were more likely to duet with playbacks the following day and 1 week later compared to those that were uninterrupted. These control females (copulations lasting 104 minutes, on average) rarely duetted with subsequentplaybacks. Further, we foundthat females that mated for 10 minutes were less likely to lay eggs than any other treatment.Our results support the mate-guarding hypothesis and suggest that extreme copulation length may function to lower female receptivity and promote egg laying by the transfer of ejaculate substances or even effectively cause monandry.

Norris, Sierra

Institution: *NC - Western Carolina University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Sierra Norris,
Martin L. Tanaka

Abstract Name: Gravity Irrigation Subsystem for Watering Plants

Plants need water to survive. One problem is knowing when and how much to water them. The overall purpose of this project was to design and engineer a simple and useful planter irrigation box that effectively waters plants the needed amount. This portion of the project was to develop a subsystem that brings water from a water reservoir to soaker hoses with a solenoid powered by an Arduino that controls when water goes through. The project also includes tubing, and a manifold 3D printed using CAD software (Creo, Parametric Technologies Corporation, Boston, Massachusetts). The mechanical aspect of this project was simple. The water reservoir, a five-gallon bucket, had a hole drilled into it to fit a half inch fitting along with a nut and washer. Clear tubing was connected to this fitting with the other end connected to the solenoid. More tubing was connected to the other end of the solenoid and to a 3D printed manifold. Three outlets were designed on this manifold with soaker hoses connected to these outlets. The electrical aspect includes an Arduino coded to control the solenoid. The Arduino is connected to a relay on a breadboard using cables. More cables are connected to the solenoid, a power source, and a neutral ground source. When the components were assembled, it was tested by putting water through the design. All aspects of the design held together and did not leak. When the Arduino was coded and connected it was tested by connecting it to a power source. The Arduino was able to control when the solenoid opened allowing water to come through and closed to stop the flow. The finished project would include this and the other two subsystems to integrate to complete the electromechanical design. The other two subsystems are working properly as well.

Noskowiak, Nick

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: Minority Status and Mental Health

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Notenberg, Alissa

Institution: ***WI - University of Wisconsin-Superior***

Discipline: Biology

Author/Contributors:
Alissa Notenberg,
Shanna Nifoussi

Abstract Name: Testing the Effectiveness of Antimicrobial Surfaces

It's no surprise public restrooms can host an ample amount and variety of various microbes-specifically on bathroom toilet handles. To make public restrooms more sanitary, institutions have implemented antimicrobial technology such as antimicrobial toilet handles. In this study, the effectiveness of antimicrobial toilet handles were examined by directly comparing the amount and characteristics of bacteria present on the surface to "regular" toilet handles. Toilet handles were swabbed in 5 different locations across campus during the last three weeks of spring semester and first two weeks of fall semester. Aseptic techniques were used to transfer swabbed bacteria to LB plates for initial growth and characterization. Following isolation, 3-5 bacteria per plate were selected for further biochemical characterization. In terms of colony counts, the antimicrobial handles had a higher average round bacteria count, while the regular toilet handles had a higher average count of irregular shaped bacteria. There was roughly the same amount of Gram-positive and Gram-negative bacteria present on both types of handles. However, over 50% of the acid-producing samples (indicating pathogenicity) originated from the antimicrobial handles. These results indicate the antimicrobial handles weren't significantly more effective at preventing the growth and attachment of bacteria compared to the regular handles.

Nou Vang, Ruth Pa

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Liz Cobain,
Amury Miller,
Ruth Vang

Abstract Name: Minority Status and Mental Health B

Discriminatory behaviors live througout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress experienced by people with minority status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to chronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of the majority stauts. This study will identify factors associated with positive and negative mental health development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Novick, Maya

Institution: ***IL - University of Illinois Urbana-Champaign***

Discipline: Social Work

Author/Contributors:
Maya Novick,
Rachel Garthe,
Allyson Blackburn

Abstract Name: Intimate Partner Violence Against Transgender and Gender Expansive Individuals: A Review of Existing Literature

In the past 20 years, more research and awareness has been directed toward intimate partner violence (IPV) within lesbian, gay, and bisexual relationships. However, few studies have examined the prevalence of IPV among transgender and gender expansive individuals. This is concerning, given that transgender individuals may be at a particularly high risk for IPV victimization. A large, national study in the United States surveyed transgender individuals, and 54% of respondents reported experiencing at least one form of IPV. Given the unique oppressions that place transgender and gender-expansive populations at risk for violence, as well as the dearth of research inclusive of these populations, a thorough synthesis and review of the literature is warranted. In the current study, a literature review was conducted that examined published articles between 2004 and 2022. This review sought to better understand the prevalence, impact, and correlates of IPV victimization among transgender and gender expansive individuals. Articles were searched for on Google Scholar and PsycInfo between September and November of 2022 using the following search terms: ("intimate partner violence" or "domestic abuse" or "domestic violence") AND ((LGBT or LGBTQ) OR (transgender or “gender expansive” or “gender nonbinary” or “gender nonconforming)). A synthesis of the articles included in this analysis will be provided. Implications for IPV prevention and response will be discussed, with attention to systems prevention and response efforts (e.g. domestic violence shelters, spiritual organizations, LGBTQ+ groups, law enforcement, etc.) to better serve and support survivors of IPV within transgender and gender expansive communities.

Nowak, Jonathan

Institution: ***PA - King's College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jonathan Nowak

Abstract Name: Development of Laboratory Instructions for Hydrology Apparatus

Civil Engineers must consider stormwater management whenever they design a structure such as a building, bridge, or culvert that interacts with the stormwater. These concepts are taught both in undergraduate and graduate hydraulics and hydrology courses together with some lab demonstrations and experiments. The Hydrology and Rainfall Apparatus such as H313 from TecQuipment is a very versatile apparatus to study various hydrology principles. H313 is also relatively sophisticated with various control and measurement components. Despite all the capabilities of the apparatus, there is no well-defined experimentation instructions available for this apparatus. This study aims to develop two structured hydrology experiments using the H313 Hydrology and Rainfall Apparatus. These experiments are 1) areal averaging of rainfall data within a basin using Arithmetic Mean, Thiessen Polygon, and Isohyetal Map methods 2) calculating the runoff coefficient of a basin using rational method. These experiments are designed after several tests, trials, and data collection. The collected data is processed and visualized using various software such as QGIS, Civil 3D, Microsoft Excel. For each experiment a Student Instruction, Data Collection sheet, and Instructor Instruction with Sample Data and Analyses is produced. Also an apparatus appendix is developed providing the technical details of the control and measurement components of the apparatus such as weir coefficient. The documents are shared in platforms such as GitHub. These documents will help instructors to conduct structured experimentation using H313 or similar apparatus.

Nowland, Chyann

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Chyann Nowland *Alicia Bauer* *Natasha Rayne,*
Craig Sheaffer *Krishona Martinson* *Michelle DeBoer*

Abstract Name: **Botanical Composition, Yield, Horse Preference, and Forage Nutrient Value of Pasture Treated with Different Soil Amendments**

Forage is the foundation of a horse's diet, therefore, pasture management is critical to improve horse health, nutrition, and pasture productivity. The objective of this study was to evaluate botanical composition, horse preference, yield, and forage nutrient value of pasture treated with horse manure, horse compost, commercial urea fertilizer, and a no product control. Plots were 3 x 6 m and soil amendments were applied at recommended or commonly used rates in May 2022. Sample collection and grazing periods occurred in May, June, July, August, and October, each over a two-day period. Botanical composition, average height, maturity, and yield of the pasture was taken on the day prior to grazing. The next day, horses were allowed to graze for four hours with preference visually assessed at two- and four-hours post-grazing based on percent removal. Data were analyzed as a randomized complete block design using PROC MIXED in SAS with significance set at P ≤ 0.05. Season-long yield ranged from 1.2 to 1.5 tons per acre and did not differ across treatments (P>0.05). Botanical composition differed across treatments with the control having the most weeds (32%) and the least grass (62%) while manure treatments had the most bare ground (11%; P ≤ 0.05). Forage nutrients did not differ across treatments (P>0.05). Horses did not prefer pasture treated with manure and only 15 and 33% of forage was consumed after two and four hours, respectively (P ≤ 0.001). All other treatments averaged 53 and 78% removal after two and four hours, respectively. Based on differences observed in botanical composition and preference, commercial fertilizer and compost appear to be the most beneficial soil amendments to be applied on horse pastures.

Nuique, Lance Justin

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Lance Justin Nuique,
Dr. Konda Reddy Karnati

Abstract Name: **Identification of Potential Inhibitors Targeting SARS-CoV-2 Main Protease Through Virtual Screening and Molecular Dynamics Simulations**

The main protease is a key enzyme responsible for Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2) replication that causes the spread of the global pandemic novel coronavirus (nCOVID-19) infection. In the present study, we have performed SARS-CoV-2 main protease sequence analysis and then we used structure-based virtual screening to identify potential inhibitors that target main protease. SARS-CoV-2 main protease sequence analysis is done through MEGA X software to identify mutations and exploring phylogenetic relationships among various sequences collected from different geographical regions. Further, we have used SAR-CoV-2 main protease structure as a target and performed virtual screening of all FDA approved drugs. We have identified top 20 compounds having high affinity with main protease and are further validated using molecular dynamics simulations and binding free energy calculations. Four compounds were subjected more expensive simulations, which revealed that the ligand binding didn't alter the overall main protease structural features. The overall results from the current investigation might be valuable for designing novel main protease inhibitors.

Nunez, Jorge

Institution: *IA - Iowa State University*

Discipline: **Architectural and Interior Design**

Author/Contributors:
Hugh Duffy,
Sitong Wang,
Jorge Nunez

Abstract Name: **Low-Carbon Footprint Concrete for 3D Printed Buildings**

3D printing concrete has recently emerged as a revolutionary technology. Over the past two decades, developments in the technology have allowed a wide variety of applications, e.g., the fabrication of buildings. Cement manufacturing accounts for approximately 5% of anthropogenic CO2 emissions worldwide. The carbon footprint created from concrete is unsustainable for the environment. New forms of concrete containing alternative materials such as waste products and bio-aggregates are being implemented to reduce the overall carbon footprint. In our research, we are testing various mixes of concrete containing shredded wind turbine fibers, recycled glass powder, corn stover, and biochar. These materials were chosen as they provided a balance of strength, workability with the 3D concrete printer, and lower carbon emissions. To test our mixtures, we developed the following workflow: mix, cure, test, and evaluate. Each concrete mixture contained varying mix ratios of cement, sand, water, and one of the alternative materials. To ensure proper test results, we made 4 test mixtures containing 3 specimens for each material. This resulted in a total of 12 specimens for each material. Each specimen was cured for 28 days under water. After curing, we tested the compressive strength of each specimen on a hydraulic press machine and analyzed measurements of the load and stress. We then calculated the carbon footprint of the concrete mix with each alternative material. This data allowed us to analyze the mixtures and determine the most suitable candidate for 3D concrete printing. The new concrete mixes showed a varying level of compressive strength and showed a noticeable reduction in carbon footprint compared to the standard concrete mix. The technology of 3D concrete printing in combination with eco-friendly concrete will lay the foundation for a more sustainable future for housing.

Nuñez, Alexandra

Institution: *PAN - Technological University of Panama (Universidad Tecnológica de Panamá)*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alexandra Nuñez,
Euclides Hernandez,
Ricardo Chan

Abstract Name: **Valve control for the improvement of the main network of an aqueduct for human supply**

In Panama, there are problems with the hydraulic network for the supply of drinking water. In different provinces and towns, there is the problem that, for the distribution of the vital liquid, there is no automatic valve control system to control the pressures according to the demand of each section of the hydraulic network. This causes overpressure in the network and, consequently, an inefficient supply. These overpressures in the pipelines bring about different unfavorable situations such as shortening their useful life, increasing maintenance costs and, in the worst case, a rupture, thus causing the community to constantly remain without water for several days. Using a PLC and the outputs of voltage variables, and being able to close or open the valve depending on differences in pressure and flow and, at the same time, performing a remote monitoring of these variables through telemetry. The objective is to distribute water more efficiently, avoiding waste and extending the useful life of the hydraulic network and, more importantly, guaranteeing the availability of the vital liquid. Currently in the country there is the necessary equipment for the automatic control of the mains installed in multiple points of the country, but they are currently underutilized since they are activated manually by an operator on site. Without the knowledge of how to do it, so the idea was born to make a project that automatically avoids overpressure in the lines, thus avoiding waste of vital liquid, increasing the life of the matrix network, and lowering operating costs, since it avoids having to send an operator to the site for the activation of the valves.

Nuszen, Kayla

Institution: *IL - Northeastern Illinois University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kayla Nuszen

Abstract Name: **Effects of Morphological Awareness on College Student Reading Comprehension**

Morphological awareness is understanding how words are composed of smaller units, such as roots, prefixes, and suffixes. Morphological awareness in early childhood leads to reading achievement and resilience in adulthood. Morphological awareness is developed through activities which also develop writing and reading skills. Difficulty with understanding morphemes can be tied to late acquisition of structuring words, identifying parts of speech or correct grammar, and issues with overall reading comprehension. Previous research suggests that morphology can be learned as a way to combat literacy development delays and is a predictor of word reading and reading comprehension in students in elementary school. This study aims to better understand the skills involved in college students' reading comprehension. Participants will first play a variety of word games. Next, students will read a short passage from a college textbook and answer a series of study guide questions. The study is online and should take no more than 45 minutes to complete. These findings will provide valuable insight into THE importance of morphological awareness and the role it plays in college student achievement.Keywords: Morphological awareness, reading comprehension, morphemes

Nuwere, Asuka

Institution: *VA - George Mason University*

Discipline: Education

Author/Contributors:
Asuka Nuwere,
Anastasia Kitsantas

Abstract Name: **Middle School Teacher Experiences regarding Implementation of a Learning how to Learn Course via Student-Engaged Design**

This study examined teachers' experiences and perceptions of the function, utility, and implementation of a Learning how to Learn Course via Student-Engaged Design (LhL-SED) which focused on developing middle school students' self-regulatory skills. Teachers were involved in the implementation of the LhL- SED and received professional development on how to cultivate students' self-regulation, curiosity, deep learning, growth mindset, self-advocacy, and school connectedness. Nine (N=9) in-service middle school teachers shared their experiences through semi-structured focus group interviews and reflections. Classroom observations were also conducted. A thematic analysis revealed a number of themes such as promoting personally-relevant activities and self-regulatory skill development (focus group interviews), as well as providing self-directed learning experiences and fostering co-regulation (teacher reflections). Descriptive and qualitative analyses of the classroom observations showed that teachers promoted and supported student self-regulation, collaboration, and growth mindset in the classroom. Findings indicated that teachers provided students with a choice and a voice in selecting projects that were meaningful to them which resulted in higher levels of self-regulation and motivation. Findings also showed that working collaboratively with peers to achieve targeted goals also helped students become self-regulated learners. Overall, teachers found that the LhL-SED promoted students' self-regulatory skills, motivation, task engagement, and curiosity. Educational implications will be discussed in relation to teacher and curriculum development.

Nye, Matthew

Institution: *VA - George Mason University*

Discipline: Education

Author/Contributors:
Matthew Nye,
Lauren Cattaneo, Ph.D.

Abstract Name: **Student Identity Shapes Approaches to Justice-Oriented Learning**

Issues of race, gender, and sexual orientation have become increasingly controversial in recent political discourse, as several states throughout America have proposed legislation banning discussions of socially sensitive topics in public schools. Regardless of the success or failure of attempts to control curricula, social identities will always be a component of classroom discussions and learning processes. Previous research has shown that identity plays a critical role in the classroom, particularly with respect to how students with privileged identities approach justice-oriented learning. For example, the acute discomfort associated with confronting one's own unfair advantages causes students with white privilege to suppress or deemphasize their racial identity to downplay their membership in a problematic social group. As calls have been made to curate pedagogical approaches that address systemic inequality in ways that do not impugn the personal self-worth of students with privileged identities, it's important to understand how privilege shapes the attitudes that students bring into the classroom. Using data collected from upper-level psychology students, the current study compares the central identities of privileged and non-privileged groups to determine how attitudes about diversity and social justice differ at baseline. Keywords: Identity Centrality, Privilege, Marginalization, Attitudes, Transformative Learning

Nyhus, Kara

Institution: *MN - University of Minnesota - Rochester*

Discipline: Public Health

Author/Contributors:
Kara Nyhus,
Angie Mejia

Abstract Name: **Future Healthcare Providers' Reflections on the Impact of Reproductive and Sexual Health Knowledge and Religion During Childhood**

While there is growing interest in researching the impact of faith and religion on the sexual and reproductive health experiences of youth in higher education settings (Ahrold; Meston, 2010; Freitas, 2015; Yarhouse et al., 2018), we still do not know enough about the experiences and perspectives of religious young adults working towards a career in the medical and health sciences. Using a variety of qualitative data collection methods (interviews, ethnographic observation notes, and focus groups), we seek to answer the following questions: How do health sciences students of various faith backgrounds make sense of past experiences learning about sex and reproduction? How do religious students in the health sciences add to their sexual knowledge "toolbox" or increase their sexual know-how while in college? What might these unique experiences tell us about the range of reproductive health practices for other U.S. young people in college? Participants involved in these conversations were part of a target population that self-identified as having a current or past association with a religion or faith.In addition to presenting preliminary findings on religious students in the health sciences and their experiences learning about sexual health during adolescence as well as their continued knowledge needs, our presentation will explore and expand the methodological choices we implemented to generate participant conversation around a potentially stigmatizing topic. This aspect of the presentation will focus on the process in designing an interactive focus group with an educational component and the success in creating a space to discuss these issues.

Nylander, Ethan

Institution: *WV - West Virginia University*

Discipline: Music

Author/Contributors:
Ethan Nylander,
Nina Assimakopoulos,
Eftihia Arkoudis,
Joshua Swiger

Abstract Name: **Compact Disc Album: Solo Works for Alto and Bass Flute by Francophone Composers**

My research comprises the promotion, preparation and recording of a CD containing eight contemporary works for alto and bass flute written by francophone composers. My CD is the first of its kind, as one containing solely music for alto and bass flutes has never been published by any artist in this country. These compositions span from 1937 to 2020 and require mastery of both traditional and contemporary techniques of the Boehm flute. Within these works I execute a variety of extended techniques; techniques that transcend the limits of traditional flute playing. The purpose of this project was to gain the experience and skill necessary to planning and completing a Compact Disc Album. This is combined with a personal fascination in French culture. In addition, this research was conducted with the intention of instituting acknowledgement, indoctrination, and representation of contemporary music on an international scale, contributing to the exposure of composers and their work in the United States. Methodology involved carefully selecting relevant works to record, learning the music with an efficient daily practice plan, connecting with the composers through research on their works and direct communication, sharing my preparation process online, and spending strategically planned hours in the recording studio.

Nylund, Maya

Institution: *PA - Lafayette College*

Discipline: Art/Music History

Author/Contributors:
Maya Nylund

Abstract Name: **Problems and Possibilities of Digitization: Imagining Kievðs Church of the Tithes**

The now destroyed Church of the Tithes (Desiatynna Tservka) in Kyiv is distinguished as the first stone church in Ukraine. Completed in 996, the church introduced a modified Byzantine style to the region, presenting the major source for monumental architecture across the Kievan-Rus. However, it was destroyed in a siege in 1240. Because of its utmost importance for the religious and cultural history of the region, the reconstruction of this monument was attempted many times, most notably in 1635, the 1700s, and in 1828; it was destroyed yet again in the 1930s.Interestingly enough, none of the reconstructions could be reliably related to the structure's original design.My own research was prompted by a digital reconstruction of the Tithes published in 2021. Like its physical predecessors, this digital reconstruction begs questions about the availability and reliability of archaeological and textual sources that would allow accurate reconstruction: what has been conjectured about the Church of theTithesand why? How should theTithesbe imagined? My project utilizes traditional art historical methods to parse the accuracy of this digital reconstruction.I examined original descriptions of the church, such as theeleventh-century manuscript,Chronicon of Thietmar of Merseburg(c. 1018) and theRussian Primary Chronicle(c. 1113) and discovered that these sources, often evoked in the 20thcentury secondary historiographies of the Tithes, only call attention to auxiliary features of the building. The textual evidence, however, does not contain architectural descriptions sufficient to create a cohesive model. Instead, the Tithesas it has been reconstructed in the 21stcentury is a product of the imagination, informed mostly by unsubstantiated hypotheses. In my presentation, I will offer the Tithesas a lesson in vigilance towards digital models of art historical objects, and of the continued importance of primary sources.

Oberg, Reed

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Computer Science/Information Systems

Author/Contributors:
Reed Oberg,
Matthew Jewell

Abstract Name: **Analysis of Bi-2212 Superconducting Filament Joining using Deep Learning Methods**

Composite Bi2Sr2CaCu2O8-x (Bi-2212) wire has great potential as a material for high temperature superconducting magnets, which can conduct with no resistance. Bi-2212 is being considered for large magnet systems due to its ability to operate under high magnetic fields, its high current density, and its ability to operate under liquid nitrogen temperatures, rather than the much colder and more scarce liquid helium. However, the individual Bi-2212 filaments created using state of the art methods sometimes bridge or agglomerate during heat treatment, which can have a negative impact on the ultimate performance of the wire. To quantitatively assess the extent of filament agglomeration, it is difficult to perform traditional image analysis techniques, particularly since the filament joining can be seen in a continuous range of expression from lightly bridged to intimately conjoined. In this project we created a U-NET like image segmentation algorithm to be able to classify filaments from transverse cross-sectional wire images as either conjoined or individual in nature, based on a manually curated set of training images. The model, after training and fine tuning its batch size, learning rate, optimizer, and class weight hyperparameters, can then subsequently classify filament pixels without human intervention. Overall, the fine-tuned model runs with an average accuracy of 95% for total image pixels, and over 75% for filament specific pixel categorization. Furthermore, the model has been shown to perform in a manner consistent with human intuition when predicting filament conjoinment. With this model, a standardized quality control process for Bi-2212 wire production can be envisioned, and a more quantitative assessment of extent of conjoining can be provided to analyze the impact of bridging and agglomeration on performance.

Obi, Chinwe Cynthia

Institution: *MN - University of Minnesota - Rochester*

Discipline: Nursing/Health Science

Author/Contributors:
Chloé Morin *Chinwe Cynthia Obi* *Brittany Brown,*
Rachel Olson *Amanda Nigon-Crowley*

Abstract Name: **Course-Based Undergraduate Research and Community Science with The Village Community Gardens**

Inclusion of undergraduates in authentic research is an effective tool to bridge the gap between theoretical and practical aspects of biology and increase competency and interest in research careers. In an effort to increase student access and engagement to research we developed a course-based undergraduate research experience (CURE). In addition, we aim to develop a project that would foster a mutually beneficial collaboration with The Village Community Garden, a local nonprofit aimed at food sovereignty and the provision of land and resources for culturally relevant food growth. Here, we aim to foster a collaboration between our community partner, students, and faculty that would promote outreach, engagement, learning, and scholarship. Students will 1) compare microbial numbers in soils of Rochester MN community gardens, 2) investigate microbial antibiotic resistance contamination within the community gardens, and 3) investigate soil microbial species with and without soil inoculant. Laboratory techniques employed to determine soil microbial counts are foundational procedures that students will benefit from performing. Furthermore, microbial soil populations are influenced by numerous biotic and abiotic features; growers are interested in learning these results. We aim to contribute to the national surveillance of antibiotic resistance of soil-dwelling bacteria to tetracycline. In addition, the students will investigate soil microbial species for resistance to three other antimicrobial agents employed in agriculture. The gardens are subject to community-grower fertilizer applications and the planting of inoculated legumes may mitigate the surplus nitrogen. We aim to identify soil microbial species with and without soil inoculant using molecular techniques. This CURE will be implemented during the summer of 2023 within the microbiology course at the University of Minnesota Rochester. Here, we are presenting our pedagogical approach and preliminary results.

O'Brien, Will

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Theatre and Dance

Author/Contributors:
Shasta Reese

Abstract Name: **Shining a Light on Experimental Theatre Practices: A dissection of Neo-Futurism as it is and how it is applied in a modern performance context.**

This project seeks to explore the tenets of an experimental style of theatre in a modern performance context while working with passionate students to help expand their means of artistic expression. Neo-Futurism is an active creative force and is continuing to evolve within the theatrical community. I will be basing my project on the work of The Infinite Wrench, a neo-futurist ensemble that is based in Chicago, Illinois. They are an ensemble of writers, directors, and actors that perform thirty plays in sixty minutes, all while following the four basic tenets of neo-futurism: no suspension of disbelief, speed and brevity, scripted and planned, reliance on chance. My goal is to create an ensemble of students at UWEC that mirrors this aesthetic of truthful communication between the audience and the performer. The main research questions I want to explore are 1. What exactly is futurism? 2. How did it evolve into neo-futurism? 3. How can we, as writers and performers, apply this specific style in a modern performance context and 4. How does a theatre practitioner develop this style of theatre? My objective for myself and the ensemble is to break out from the robotic tendencies of realism based writing and thinking and creating a new heightened theatrical sensibility. I want the audience to leave with a newfound appreciation for experimental theatre. In addition, I want our plays to evoke a particular atmosphere that challenges the audience to think for themselves. Moreover in executing this project, I want to gain dexterity in performing, writing, and directing within an experimental environment while also developing my skills as a leader amongst fellow creators. Lastly, I would like to develop this material into something suitable for a possible confrence presentation, a poster and/or a short performance at NCUR.

Occhipinti, Cecelia

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Cecelia Occhipinti,
Alexander Carson,
Anna Mychalowych,
Terrence Wong

Abstract Name: **Role of Srcap in Hematopoiesis and Leukemogenesis**

The development of acute myeloid leukemia (AML) is driven by the accumulation of mutations in hematopoietic stem cells (HSCs), and leukemic clones are often characterized by a defective response to DNA damage. Mutations in SRCAP have been recurrently identified in AML, suggesting the importance of this gene in its evolution. SRCAP is an epigenetic modifier responsible for exchanging the canonical H2A histone with its H2A.Z variant. However, how mutations in this gene and disruption of this epigenetic pathway promote leukemogenesis remains unknown. In our lab, we previously determined that loss of Srcap results in increased DNA damage in murine HSCs, and we hypothesize that loss of this gene may lead to defective DNA damage repair, increased mutational frequency, and the development of leukemia. We propose to study how loss of SRCAP impacts the response to DNA damage in both normal hematopoietic and leukemic cells using a mouse model with conditional knockout of SRCAP and hematopoietic cell lines with shRNA-induced knockdown of SRCAP. We hypothesize that loss of SRCAP will result in decreased H2A.Z genome deposition. We also hypothesize that the genomic sites with decreased H2A.Z deposition upon SRCAP loss will also have evidence of increased DNA damage. To test these hypotheses, we will use H2A.Z and -H2A.X ChIP-seq to determine how SRCAP loss impacts H2A.Z distribution and DNA damage in a site-specific manner. By understanding how SRCAP loss impacts the response to DNA damage in HSCs, we will better understand how HSCs respond to DNA damage and how disruption of this process contributes to the development of leukemia. Understanding how HSCs evolve into leukemia may allow for more effective treatments of this disease.

O'Connor, Megan

Institution: *MN - Minnesota State University - Mankato*

Discipline: Education

Author/Contributors:
Keenan Hartert *Finley Sims* *Megan O'Connor*
Jana Weber

Abstract Name: **Factors Associated with Lower Range of Biology Exam Scores**

Tuition rates across American colleges and universities are rising, contributing to the mounting financial strain on students. Joining the workforce in an attempt to ease that burden represents an emerging option. However, the loss of time due to work commitments likely represent a substantial impasse towards effective exam preparation. Specifically, we observed this relationship in archival data from the spring 2022 BIOL-211 Genetics course at Minnesota State University (MNSU) (IRBNet ID: 1899658). Comparing exam scores between students working (or committed to) a substantial schedule of 20+ hours per week versus those faced with lesser commitments revealed significant differences in course performance. Consistently low exam scores typically contribute to course failure, the subsequent obligation to re-take courses, further financial commitments, and ultimately the greater likelihood of lowered student retention. Herein, we report that students working/committing 20+ hours per week performed significantly inferior to non-working students, and we assess specific consequences and discuss potential remedies. Students committed to 20+ hours per week fared significantly worse in terms of total class points (P = 0.0089), with this population averaging a collective total of 75.5% (N = 44) compared to counterparts with less commitments, who averaged 82.2% (N = 30). These differences were most felt in the three class exams which accounted for 300 of the 500 total points (P = 0.0255, P = 0.0028, P = 0.0311). Consequently, of the 16 students that failed, 75% of them belonged to the 20+ hours population. We are the first group to report the statistical influence of out-of-class commitment levels vs. Biology exam scores. These findings represent important steps towards the identification of further underlying factors associated with reduced student exam performance, capable of informing on student retention, well-being, and an emerging benchmark for higher education to consider as the student-financial landscape evolves.

Ogbuji Emmanuel, Okwudindu

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Okwudindu Ogbuji Emmanuel *Anne Osano*

Abstract Name: **Determining the effects of Phosphorus on growth and biofortified finger millet (Eleusine coracana L.) germplasms in making baby foods in Kenya**

Communities throughout Africa, especially in Kenya, are experiencing food insecurity as a result of the drought. Although arid and semi-arid lands (ASALs) account for more than 80% of Kenya's land mass, there has not been a significant focus on utilizing a native "climate smart" drought resistant crop such as finger millet. The crop is nutrient-rich and has the potential to resolve worsening malnutrition, a lack of agricultural diversification, and economic stagnation due to its drought resilience, high nutrient levels and health benefits. The objective of this study was to determine how phosphorus levels and seed priming (acidic and alkaline) influence the growth and root structure of finger millet. Furthermore, the possibility for improving the low nutritional contents of finger millet by adding protein sources in the formulation of infant food was evaluated.The trial was conducted at Egerton University labs using 3 finger millet genotypes (Nakuru FM1, U-15, Snapping Green) in 3 replications. Data on germination rates, imbibition rates and nutrient profiles were analyzed. Results showed that water (control) highest germination rates (68%) while acidic and alkaline conditions reduced germination and growth of finger millet seeds. Nutrient analysis showed that, though biofortification increased phosphorus, calcium, and zinc for the baby formula, there was no significant difference in available protein against unfortified baby formula. Future research will investigate different protein sources to biofortify finger millet baby formula. Furthermore, germination tests will include additional concentrations of priming solutions to reflect the different oil abiotic stress conditions in drylands and its effects on growth and to yields. The research was completed at Egerton University in Njoro, Kenya, in the summer of 2022, under the supervision of PI Dr.Anne Osano of Bowie State University and Paul Kimurto of Egerton University, with assistance from Anne Amayu.

Ogden, Caleb

Institution: *IA - Iowa State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Soren Hellyer *Caleb Ogden* *Manish Kumar* *Siddhartha Pathak*

Abstract Name: **Studying the Effects of Aging on the Structure and Properties of Off-Eutectic Pb-Sn Solder Joints for In-Space Applications**

Soldering is a process in which molten metal is used to metallurgically bond two components together without melting the components themselves, predominantly used to create electrical and pressure joints. Metal joining processes such as soldering are currently being considered at NASA as possible techniques for use in in-space joint repairs and Mars rover sample return mission. However, the reliability of these solder joints is compromised when subjected to extreme conditions. Soldering studies during the in-space soldering investigation (ISSI) in 2003-04 aboard the International Space Station (ISS) were designed to gain a better understanding of solder porosity development, surface wetting, and equilibrium shape formation in microgravity. But these investigations have not considered the effect of aging on the solder microstructure and properties. Previous investigations have shown that near-eutectic 40Pb-60Sn soldering alloys exhibit grain coarsening and reduced mechanical properties with age, even at room temperature. Additionally, these investigations have shown that microgravity samples follow a similar aging pattern as terrestrial samples.In our current NASA EPSCoR project, solder samples will be produced in microgravity onboard the ISS and sent back to Earth for testing. The new experiments will include off-eutectic 50wt%Pb-50wt%Sn solder, a composition where the effect of aging is unknown. Understanding the effect of aging on off-eutectic solder is critical to understanding the properties of new samples produced onboard ISS in the coming years, as samples will not be returned to the lab and tested immediately. In this work, we report results from the microstructural characterization using scanning electron microscopy and resultant micro-to-nano mechanical response of 50wt%Pb-50wt%Sn solder produced in terrestrial environments as a function of aging time under room temperature conditions. The understanding gained in this study will enable robust and reliable protocols for solder-based solutions to address repair and fabrication needs in space exploration for years to come.

Oh, Chanho

Institution: *CT - Yale University*

Discipline: International Studies

Author/Contributors:
Chanho Oh

Abstract Name: **Why Do Countries Not Commit to Paris Climate Deal? Analyzing the Implementation of the Paris Agreement**

In 2015, in response to the pressing issue of climate change, 195 countries gathered together at COP 21 and signed the Paris Climate Agreement. The deal aimed to limit global warming to below 2 (preferably 1.5) degrees Celsius, as compared to pre-industrial levels. For the agreement's implementation, each country promised to submit a Nationally Determined Contribution (NDC) and a new updated NDC by 2020 and every five years thereafter. The NDCs conveyed how each country would formally commit to a low-carbon-production-based, climate-resilient society. The updated NDCs represent a progression from the previous NDC and reflect the country's highest ambitions. Despite the agreement to submit NDCs by 2020, there have been varying responses to the submissions — with some countries not submitting any at all. Little is known why certain countries did not keep their pledge while others did. This study aims to understand the factors that may have contributed to a country's continued commitments to the Paris climate deal via the submission of their updated NDC. To this end, I relied on the UNFCCC (United Nations Framework Convention on Climate Change)'s NDC submission data in 2020. A multivariate regression analysis was employed to determine the relationship between countries' NDC updates and multi-dimensional factors, including socio-economic, political, and environmental factors. The major findings indicate that a country with high political stability but low physical vulnerability to climate change is more likely to commit to the Paris climate deal. This study offers a timely insight into how to uphold the Paris climate deal in order to achieve carbon neutrality by 2050.

Oh, Sunho

Institution: *VA - University of Virginia*

Discipline: **Business**

Author/Contributors:
Sunho Oh

Abstract Name: **Impact of COVID-19 on Consumer Behavior Change: The US Case**

The COVID-19 Pandemic has led to a dramatic change in our daily lives and an unprecedented challenge to marketplaces with disrupted consumer shopping behaviors. It is evident that the chance of contracting the virus caused consumer behavior changes, as most grocery shoppers did not conceive the health concerns over grocery shopping before the Pandemic. This study aimed to investigate the overall impact of the Pandemic 19 on consumers' shopping preferences and behaviors in the US context. It also examined how gender and age played a role in shoppers' perceptions during the peak of the Pandemic. It hypothesized that the older are more likely to alter their shopping behaviors. For the empirical assessment, this study relied on the Pew Research Center's American Trends Panel Survey, sent to 11,537 Americans, and employed the difference-and-difference statistical modeling technique. The survey asked how personal lives were affected and how well the US government has been responding, and a series of categorial variables were created. The major findings indicate that most male shoppers tended to want to go out more than female shoppers and that younger generations of shoppers grew to use delivery services more than the older. The younger generations of shoppers also felt comfortable with online shopping and carry-out services, illustrating the quicker and stronger shopping behavior changes. This research provides insights into variations in peoples' resilience over public health concerns and suggests how business managers and policymakers alike may respond to the ongoing shopping behavior changes nowadays.

Ohene-Adu, Ayeyi

Institution: *GHA - Ashesi University*

Discipline: **Business**

Author/Contributors:
Ayeyi Ohene-Adu

Abstract Name: **The short-term impact of Instagram commerce on the livelihoods of artisans at the Accra Arts Centre**

A sustainable livelihood can withstand shocks and stresses. The artisans at the Accra Arts Centre, the biggest locally made art district in Ghana, face a stressor for their livelihoods. This tension emanates from the ongoing Marine Drive Project. This aims to transform parts of the Accra coastline into a business residential district and will involve demolishing the Accra Arts Centre. As a result, these artisans must translate their livelihoods into sustainable ones that can withstand stresses such as these. Due to the COVID-19 pandemic, consumers' usage rate has increased across social media. Instagram is a unique social media platform because its value proposition is visual sharing and incorporates an embedded e-commerce system. This makes the platform a keen option for artisans relying on image sharing to exhibit their work online. However, many of these artisans in Ghana lack knowledge of how to use these tools to boost their business. This thesis studies a phenomenology known as the Digital Business Transformation Initiative. This social initiative teaches artisans how to create, manage and optimize Instagram accounts to further their businesses. From the initial findings of a sample of 120 artisans, there is a trend of artisans that frequently use Instagram tools, gaining more brand awareness. The following steps of this research are to understand the trends identified when the artisans have optimized accounts and if this will directly impact sales. One of the hypotheses is that Instagram commerce leads to increased sales. In that case, Instagram trade may be considered a sustainable livelihood for artisans.

Ojeikhodion, Rachael

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: **Sociology**

Author/Contributors:
Rachael Ojeikhodion,
Alexis Myhre

Abstract Name: **Breaking Down Barriers: Providing Adequate Sexual and Reproductive Health Education, Access, and Awareness in Health Science Focused University**

The majority of students in colleges and universities in the United States are sexually active. Unintended pregnancies, contraction of sexually transmitted infections, and relationship/sexual violence negatively impact students' educational trajectories. College students who lack access to sexual health education, resources, and preventative services are at greater risk of adverse outcomes. Students attending the University of Minnesota Rochester (UMR) do not have readily accessible, or adequate, sexual and reproductive health resources. This newly developed satellite campus is comprised of 78% women and 82% of the students are aged 18-21. A student-driven inquiry of 95 UMR students revealed that 70% indicate no or uncertain access to sexual health education on campus. Only 12% of UMR students report easy access to sexual health services. Nearly 70% of students report cost, privacy and/or confidentiality contribute to significant barriers to contraceptive attainment on campus.As part of a pilot study, graduates of UMR implemented a grant-funded system to provide increased accessibility of contraceptives and reproductive products on campus. This pilot program assures confidentiality as access to sexual health resources is provided. In addition, a survey was designed and implemented to assess socio-demographic information, understand perceived and real barriers to sexual health services, resource acquisition on campus, and to briefly assess UMR student sexual health behaviors. Here we report our findings and lessons learned from this innovative solution to meet student reproductive and sexual health needs.

O'Keefe, Sam

Institution: *FL - Jacksonville University*

Discipline: **Biology**

Author/Contributors:
Hannah Williams,
Samantha O'Keefe,
Luke Stoeber

Abstract Name: **Effects of Microplastics Exposure in the Sea Anemone, Exaiptasia pallida**

Microplastics are one of the most common forms of pollution found in marine environments, and their small size (<5mm) allows them to be easily ingested by marine biota. Exaiptasia pallida is a solitary anemone native to the western Atlantic that harbors symbiotic dinoflagellates like those of reef building corals, and passively feed on prey such as brine shrimp. To assess the influence of microplastics on E. pallida, a series 48-hour laboratory experiments were conducted in which symbiotic and aposymbiotic anemones were exposed to 100 µm polystyrene microplastic beads in the presence and absence of brine shrimp. Ingestion and egestion of microplastics, and photosynthetic parameters were measured at 3, 24, and 48 hours following initial exposure. At 48 h, anemone tentacles were harvested and analyzed for algal symbiont density. Physiological stress in the anemones was investigated via assessment of antioxidant enzymes, superoxide dismutase, catalase, and glutathione peroxidase. E. pallida consumed polystyrene beads in every microplastic treatment, and both presence of brine shrimp and symbiotic state significantly increased microplastic ingestion. Aposymbiotic anemones ingested more microplastics than symbiotic anemones, suggesting that bleached anemone communities may be more susceptible to microplastic pollution.

Okeh, Doreen

Institution: *GA - Emory University*

Discipline: **Public Health**

Author/Contributors:
Doreen Okeh

Abstract Name: **The Risk at Birth: Racial Health Disparities among Pregnant Black Women**

The aim of this study was to examine health disparities amongst pregnant Black women and other racial ethnicities. The leading choice of research was descriptive research using quantitative data. Data were collected by scouring medical databases ranging from 2008-2021. Sources revealed that Black women are 3-4 times more likely to die in childbirth than white women. Interestingly, it was discovered that 60% of pregnancy-related deaths were preventable, and there were no significant differences in preventability by race/ethnicity. The largest discrepancies were found with cardiomyopathy and pre-eclampsia conditions.Conclusions for the impacts of health disparity upon pregnant Black women are provided.

Okumu, Metrid

Institution: *SC - Benedict College*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Metrid Okumu

Abstract Name: **Using Machine Learning Techniques in Breast Cancer Prediction**

Cancer is one of the leading health problems worldwide. Breast cancer is one of the frequent types of cancer affecting mostly women. Statistics show that at least 8% of women are affected by breast cancer in their lifetime, and it is currently the leading cause of death among women. Early detection of breast cancer improves the timely treatment of the affected individuals and, in most cases, increases the survival rate. This paper compares different machine-learning techniques used in breast cancer tumor detection. In this study, the Wisconsin breast cancer data will be used. The aim of this project is to come up with a comparative study of the different techniques. In addition, also highlight the strengths of each technique used. The dataset is classification data with 569 samples and 31 features which we will use to make the prediction. The machine learning models are logistic regression, random forests, decision trees, neural networks, and support vector machines (SVM). The machine learning model's performance is evaluated based on the test accuracy.

Oldenburg, Faith

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Keegan Gunderson

Abstract Name: **Understanding the Molecular Mechanism of Opioid Action in the Human Body Through a Course Embedded Computational Research Project**

Chemistry has and will continue to play an essential role in the development of new drugs. Specifically, chemical synthesis has resulted in several synthetic opioids, for example, morphine, oxycodone, and codeine. In this research, the goal is to gain an improved understanding of the interaction between an opioid and the opioid receptors present in the human nervous system and determine which pain relievers are the most effective. In general, the two chemical properties that regulate the reactivity of a molecule are its electronegativity, or the ability of an atom in a molecule to attract electrons, and chemical hardness, which is the ease with which the atom's valence electron clouds can be distorted. The chemical properties of twelve prescription pain medications are investigated computationally. The drug molecules are constructed using a web-based tool WebMO, and their electronegativity and hardness are determined using a quantum chemistry program called Q-Chem. Also, the interactions between prescribed opioids and opioid receptors are analyzed using the online resource SWISSDOCK. Additionally, SwissADME is used to investigate the pharmacokinetics of each drug molecule. Our findings will offer insight into how different opioids interact with opioid receptors and how that information could be used in developing better pain medications. The preliminary results of the research will be presented.

Oldham, Jace

Institution: *MN - Minnesota State University - Mankato*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Raissa Natacha Ineza,
Jace Oldham

Abstract Name: **Effectiveness of Steel Wires in Compressed Stabilized Earth Bricks (CSEB)**

The purpose of this research project is to contribute to the development of interlocking Compressed Stabilized Earth Bricks (CSEBs) by studying crucial engineering properties (e.g., strength) of various highly compressed soil/stabilizers mixes of CSEBs. One of the many approaches involves steel wires' effect on the compressive strength and absorption of CESBs. We will examine three sets of samples with varying mix proportions (soil with 70% sand and 30% fines), then stabilize them with 10% Portland Cement. Two of the three sets will contain 1-inch cut steel wires. Afterward, our soil samples will be compressed with a (16-20) MPa hydraulic pressure compactor. Through experimentation and examination, the study will contribute to the knowledge of this evolving, aspiring green technology manufacturing environmental-friendly CSEBs. Unlike ordinary and modern construction materials like concrete and Fired Clay Bricks (FCB), which foster environmental degradation, manufacturing CSEBs poses a potential solution for effective, environmentally friendly building materials. Furthermore, they are energy efficient and economical compared to the production of FCBs that significantly damage our environment (e.g., global warming and Ozone depletion) due to the high energy levels. Along with being environmentally friendly, there are numerous other benefits of CSEBs. For instance, they lower transportation costs, promote local resources, develop the local economy rather than spending on import materials and improve access to quality housing for many people. Ultimately, our goal is to contribute to developing CSEBs as green construction materials through mechanical and chemical stabilization techniques. The anticipated results are that incorporating steel wires in CSEBs will reinforce compression and absorption.

O'Leary, Conall

Institution: *CA - Loyola Marymount University*

Discipline: **Physics/Astronomy**

Author/Contributors:
Conall O'Leary

Abstract Name: **Rheological Investigation of Protein Mechanic**

Enzymatic proteins are crucial to cellular function, performing extremely important tasks within the human body. More specifically, cellular function and efficiency depend on chemical reactions facilitated by enzymatic proteins. Previous research has shown that proteins are non-static objects, undergoing conformational changes within their reaction cycle. Enzymes need to couple their chemical reactions to this mechanical motion in a very specific and regulated fashion. Enzymatic activity is well understood biochemically, but there is limited data on the mechanical properties of enzymes. Thus, further exploration of these macromolecules employing a biomechanical approach is necessary to obtain a comprehensive view of how proteins function. For this purpose, in this study a novel technique is used to investigate the physical properties of proteins. This technique, called Nano-rheology, can measure the conformational changes of the protein under different frequencies and amplitudes of the applied oscillatory force. In this setup gold nanoparticles, tethered to a gold surface by the protein, are driven by an ac electric field while their displacement is synchronously detected by evanescent wave scattering, yielding the mechanical response function of the macromolecule in the frequency domain. Collected data on the mechanics of proteins contributes to the larger encyclopedia on the relationship of protein structure and function and can be applied to advancements in many fields.

O'Leary, Ryan

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **FAN Abstract**

Author/Contributors:
Ryan O'Leary,
Lori Randall,
Laura Lee,
Sandra Neumann

Abstract Name: **Fostering Creative Inquiry on the Two-Year Campuses: A Discussion at the Confluence of Humanities, Sciences, and Academic Support**

As undergraduate research is a high-impact pedagogical practice, offering our students opportunities for meaningful and creative inquiry and guiding them as they undertake that inquiry is especiallyimportant on the two-year campus. Some of our students will graduate with an associate degree, meaning that this is the only chance they will have to do this work. Others will transition to four-year institutions, where they will need to be prepared for higher-level research when they arrive. At the same time, two-year colleges present unique challenges in supporting undergraduate research and embedding it into the curriculum. This panel will share some of the challenges faced by students, faculty, and staff in our two-year colleges from three perspectives—the sciences, the humanities, and academic support—then guide a discussion about strategies for meeting those challenges to enrich undergraduate research and creative inquiry. By bringing together these perspectives, we will examine undergraduate research on the two-year campuses at the confluence of the humanities, the sciences, and academic support with the goal of fostering creative inquiry and preparing our students to succeed in the next stage of their intellectual growth.

Oleckna*, S. Carter

Institution: ***FL - Florida Gulf Coast University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tori Guarino,
S. Carter Oleckna

Abstract Name: Retention Pond Recovery Practices and their Effects on Water Quality and Littoral Vegetation

There are more than 8,000 retention ponds in Lee County, which are critical for pollution reduction and flood prevention. Many of these retention ponds, however, do not fulfill their intended purpose of preventing flooding and reducing pollution; rather they suffer from an imbalance in the nutrient levels and vegetation die offs. A variety of littoral and aquatic plant life plays an important role in improving the pond's health by acting as a filter to sequester nutrients which aids in reducing pond pollution. By comparing the water quality and plant biodiversity of differing retention ponds, the effectiveness of various pond management strategies can be evaluated. In this study, three different Lee County retention ponds with various management practices and implementations were compared. The pond labeled FGCU Library Pondserved as the control because it is specifically designed to mimic natural conditions and resembles a wetland with lower nutrient levels and higher plant biodiversity. The ponds labeled Fairwinds and Southlandare in different stages of restoration. Since November 2021,Fairwindshas had a "no-mow" zone, eliminated pesticide and copper dye applications, and has removed an invasive plant species. Until May 2022 when the community implemented the same recovery program asFairwinds,Southlandmowed the littoral zone and used pesticides and copper dye which killed all vegetation.Water quality samples and data analysis evaluating the impact of the restoration strategies have shown significant lowering of nutrient levels after the change in management practices. As of May 2022, the Fairwinds pond showed similar nutrient levels as theFGCU Library Pond while the nutrient levels of the Southland pond are steadily decreasing. Our next phase of research—the continuation of plant composition surveys—looks to determine the impact of lower nutrient levels on plant biodiversity.

Olerich, Ethan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ethan Olerich,
Claire Dennis,
Easton Blissenbach,
Megan Worzalla,
Jamie Lyman Gingerich

Abstract Name: Analysis of 2 variants of CERKL, a gene associated with ocular disease

Genetic testing, including whole genome and exome sequencing, is quickly becoming a standard healthcare practice, especially for patients with rare diseases. While some changes to DNA sequences can be benign, there are several variants that have not been characterized. One large group of these variants are classified as variants of uncertain significance (VUS), as the effects have not been directly studied yet. However, effectively interpreting the relationship between identified variants and disease remains challenging. VUS can include variants that are predicted in silico analyses to affect splicing of the pre-mRNA into mature mRNA. Disruption of splicing can result in loss of a functional gene product due to exon skipping, changes in the reading frame, or introduction of a premature stop codon. In collaboration with PreventionGenetics, our lab analyzes VUS predicted to affect splicing of genes using a minigene system. Briefly, the minigene system involves cloning a single gene segment into a plasmid vector which is transfected into eukaryotic cells. Processed mRNA transcripts are then sequenced to determine the effects of the variant on splicing. We will present our analysis of 2 variants in the CERKL gene and their potential clinical relevance.

Oliva, Destiny

Institution: *CA - University of California - Santa Cruz*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Destiny Oliva

Abstract Name: Psychology of Acting Disassociation Methodology

Breaking down a character's psyche is important as a way to help the actor disassociate themselves, and provide them with a fully round-rounded view of their character's world. A character is written for a specific audience, The research of an actor is to understand how the audience will respond and react based on their social, economic, and historical background. This methodology allows performers to really dissect the understanding of empathy, and with that is how we reach deep, rooted emotions to give the best performance. Using psychology as a tool for characterization is not only a way to give an accurate and authentic performance. However, many performers dive into the characters and have a hard time disassociating with their characters after the workday is done. This can lead to mental health issues and even tragedy. In this 15-minute talk, I will explain how a psychology-based methodology for character building allows the actor or performer to know the character deeply so that when they step into the character, they understand why that would be their response or reaction, giving the performer a chance to disassociate between character and human being.

Oliver, Mary Jo

Institution: *TN - East Tennessee State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Chloe Salyer,
Mary Jo Oliver,
Lauren Ledford,
Meredith Jordan,
Adam Walker,
Andrea Clements

Abstract Name: The Impact of COVID-19 on Recovery Communities in Appalachia

COVID-19 led to an evolution in substance use disorder (SUD) treatment where service providers and persons with SUD have faced various barriers in giving and receiving treatment (Mellis et al., 2021; Palacio-Gonzalez et al., 2022; Radfar et al., 2021). Therefore, the purpose of this study is to examine recovery meetings pre- and post-COVID-19. Data was collected through phone interviews and emails that were coded to account for the current state of recovery meetings from 2018-2022. The data was analyzed using a chi-square test of independence and a chi-square goodness of fit test. In our sample of recovery meetings, there was a significant difference between the expected number of meetings before and observed number after COVID-19 X2 (4, N = 350) = 39.303, .001. Furthermore, there is a significant relationship between the number of meetings offered in the noncore, micropolitan, small metro, and medium metros and their meeting status. This indicates that most rural locations are related to lower frequencies of meetings (12, N = 350) = 44.983, .001, Cramer's V = .207. An overwhelming majority of the meetings have an unsure status (N = 118). This indicates the meetings could not confirm or deny their availability of transportation. Meetings that do offer transportation (N = 10) and do not offer transportation (N = 77) lacked sufficient sample size to analyze differences in locations. Thus, we can only tentatively support our final hypothesis. Based on our results, we can posit that recovery meetings and communities have been negatively impacted by the COVID-19 pandemic in Appalachia.

Oliver, Payton

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biology**

Author/Contributors:
Lindsey Friend,
Payton Oliver,
Bradley Carter

Abstract Name: **Effects of Well Opacity, Well Shape, Length of Light-Dark Stimulus Time, and Larval Age on Zebrafish Larvae Swimming Behavior Development**

Zebrafish are an excellent model organism for high-throughput behavioral analysis. Measuring development of simple behaviors such as swimming can provide insight on underlying neurodevelopment of zebrafish larvae. Dark-induced hyperlocomotion is a common stimulated movement used to assay swimming behavior. Video tracking software allows analysis of swimming patterns in response to cycles of light and dark stimuli in a controlled environment to be conducted. However, the methods used in such zebrafish behavioral studies vary in the literature, and some intrinsic and extrinsic factors have been shown to significantly affect fish behavior. We investigated whether four additional factors (well opacity, well shape, length of light-dark stimulus time, and larval age) influence swimming behavior in larval zebrafish. 5 day post-fertilization (dpf) zebrafish in 96-well plates were exposed to an alternating light-dark protocol and tracked for movement using a commercial motor tracking system (Noldus DanioVision). 5 dpf fish in opaque wells showed higher average velocity compared with 5dpf fish in clear wells. Fish in square wells also showed higher average velocity in all lighting conditions compared to fish in circular wells. Fish exposed to differing lengths of light-dark stimulus time showed no difference in swimming behavior. Varying the age of zebrafish larvae tested also showed no effect on swimming behavior. Our results emphasize the importance of internal normalization per experiment and reporting protocol details to enable informed comparisons between these kinds of behavioral studies.

Ollila, Baillie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Education**

Author/Contributors:
Baillie Ollila,
Karsten Powell

Abstract Name: **Accessibility in Receiving Accommodations in Higher Education: A Qualitative Case Study Analyzing Students with Disabilities at the University of Wisconsin- Eau Claire**

Since the enactment of The Americans with Disabilities Act (1990) and Section 504 of the Rehabilitation Act (1973), there has been an increase in students with disabilities in higher educational settings (Smith 2021; Taylor 2021). Despite legal protection against discrimination, students with disabilities continue to face barriers. This case study's aim is to answer the research question: Is the University of Wisconsin- Eau Claire accessible and accommodating to students with disabilities on an attitudinal basis? Informing this qualitative case study are three forms of data collection: reflective journaling, interviews, and pre/post-study surveys. The focus population was 20 undergraduate students enrolled with the Services for Students with Disabilities Office at the University of Wisconsin- Eau Claire. The expected results based on the data that has been collected to date indicate that students with disabilities perceptions of themselves are influenced by their interactions with their university instructors. These interactions include requesting and receiving accommodations. The need for continued research using evidence-based practices, such as Universal Design for Learning in higher education is also discussed.

Smith, S., Woodhead, E., & Chin-Newman, C. (2021) Disclosing accommodation needs: exploring experiences of higher education students with disabilities, International Journal of Inclusive Education, 25:12, 1358-1374, DOI:10.1080/13603116.2019.1610087
Taylor, B. C., & Weisberg, R. M. (2021). The ADA & Higher Education. Great Lakes ADA Center, 1–29. Retrieved July 5, 2022, from https://www.adagreatlakes.org/Publications/Legal_Briefs/Brief_45_ADA_and_Higher_Educ.pdf.

Olson, Amber

Institution: *NC - Elon University*

Discipline: **Art/Music History**

Author/Contributors:
Amber Olson

Abstract Name: **Italian Renaissance Cultural Values Represented in the Image of Children**

Cultural values of the artists and/or the Italian people in the Renaissance period are reflected in depictions of children in works of art in this period. Examples of indicators of cultural values include; the shapes of children's bodies, their facial expressions, other individuals within the image, objects that hold value, or a specific story being told in the work of art, are. The portrait of Giuseppe da Porto and his son Adriano (Paolo Veronese, 1555 AD) appears to portray a protective father with a firm hold on his child, who in return reaches for his father with admiration and innocence. This is a noteworthy image not only in the relationship between father and son, but also in the clothing and artifacts in the portrait that imply significant wealth and cultural values of that time, within a certain population. In addition to familial representations in art, children often appear in biblical stories and mythological fables in Renaissance art. Presentations of children's busts, specifically males, in the early Renaissance were often renderings of St. John the Baptist. Arnold Coonin argues that these images embody the destiny of a male child, so much so, the artist captures the vitality of a child's life in a way that differs from medieval sculptures. For Coonin, these Renaissance sculptures emphasized the corporeality of the human child, especially in their depiction of religious Christian figures. In this paper, I will explore how certain cultural values, set by societal norms, shaped and formed images of children throughout the Renaissance and how art can be an indicator of cultural values of the time.

Olson, Emily

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Nursing/Health Science**

Author/Contributors:
Grace Beebe *Emily Olson*

Abstract Name: **Mindfulness Interventions for Vaping Management**

Background: Omoike (2020) reported that 43.2% of college students experienced vaping. Kava (2020) also reported that peers' increasing exposure to vaping and school-related stress are associated with vaping behaviors. There are several risky behaviors associated with vaping among college students. Hefner (2019) found that e-cigarette use was associated with drinking alcohol, binge drinking, and was more prevalent among those with psychiatric and substance use disorders. Since vaping is a rather new phenomenon, there are few interventional studies published.Searching PubMed with keywords of "vaping" and "randomized control trials" resulted in 2 publications. Walter (2019) found that the self-affirmation narrative increased self-appraisal and perceived risk among college-aged young adults about vaping. Prokhorov (2021) also found that eight weeks of receiving gain-framed positive SMS increased participants' perceived risk of vaping. Objective: This study aims to investigate University of Wisconsin-Eau Claire students' behaviors and rationales for vaping, along with the effectiveness of practicing mindfulness techniques in combination with weekly positive framed short message services (SMS) on vaping behaviors. Methods: A total of 80 participants who vape as a school stress intervention are asked to describe their habits with a pre-test questionnaire. Upon completion, they will be assigned to an experimental or control group, in which only the primary investigator will have an identification key. For four weeks, the experimental group will be provided vaping pamphlets, mindfulness techniques (4-square breathing, coloring books, meditation, journaling, etc.), and weekly positive SMS, while the control group will continue with their normal behaviors. Two and four weeks after the initial pre-test, participants will receive questionnaires, asking about their vaping habits and stress levels. From the data collection, we will determine how mindfulness techniques affect participants. Results: Results are pending until the study is completed. Conclusions: Conclusions are pending until the study is completed.

Olson, Emily

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Emily Olson

Abstract Name: Cyberbullying and Race

Cyberbullying is a behavior that can have numerous negative consequences for the youth victimized by it. Thus, investigating risk factors and protective factors for cyberbullying is a worthwhile endeavor. The current study, to be presented in a poster format, was first conducted as a literature review focusing on cyberbullying, both victimization and offending, in relation to the demographic race and expanded further. Numerous peer-reviewed studies from sources such as Google Scholar and Ebsco from the fields of criminal justice, psychology, and adolescent health were read and evaluated for this review. Although no one conclusive answer regarding race and cyberbullying was found, some patterns did emerge in the literature. Two trends are dominant in the research: the first being that white students are victimized by cyberbullying more often than non-white students and the second being the opposite, that non-white students are victimized by cyberbullying more than white students. There are numerous different reasons provided by researchers to back and attempt to explain these findings. The literature does not support one finding more strongly than the other, thus future research must be conducted in order to figure out which trend is more prominent. More research on race and cyberbullying offending would also be extremely beneficial.
Keywords: Cyberbullying, race, risk factor, protective factor, victimization, offending

Olson, Emma

Institution: *MN - Bemidji State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Joshua Storey,
Emma Olson,
Ashley Jensen

Abstract Name: Biochemical Analysis of Non-Protein Coding RNA LINC00298 and Its Expression in Early Onset Alzhimers.

Alzheimer's is a terminal-neurodegenerative disease which causes neuronal loss in the brain. This disease affects 5.6 million people a year over the age of 65 and is the most common diagnosis among Dementia patients. Data meta-analysis of Alzheimer's patients has found that specific genes, when expressed, may lead to the development of Alzheimer's. One gene of interest is LINC00298 which is a non-protein coding RNA in the brain that is present in Early-Onset Alzheimer's. Very little is known about the impact of this gene during development. Our research team's focus is to biochemically and biophysically analyze LINC00298. Working in collaboration with the School of Pharmacy at North Dakota State University, using Circular Dichroism and Cell Mobility Shifts, researchers were able to identify that the gene depends on Mg2+ using the electrostatic interactions to undergo significant structural changes upon binding. Additionally, through the use of Mass Spectrometry in coordination with the University of Minnesota Minneapolis, Center of Mass Spectrometry and Proteomics. The LINC00298 gene was biotinylated at the 3' end and bound to streptavidin beads. This testing allowed for an understanding in its interactions with enzyme metabolism as well as protein translation. This new information gives insight on the importance of the gene and will potentially assist in finding solutions for Alzheimer's in the future.

Olson, Grace

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Business

Author/Contributors:
Daniel Gullifor,
Rebecca Wyland,
Scott Lester,
Grace Olson,
Emilie Allen

Abstract Name: More than one victim: The mediating role of envy in the impostor phenomenon-workplace deviance relationship

PurposeThose who experience the impostor phenomenon (IP; Clance; Imes, 1978) believe they have tricked others into believing they are more competent than they believe themselves to be, and they fear being exposed, despite impressive records of achievement. While most research presents those who experience IP as victims to be pitied, little research has considered the dark side of IP and the lengths those who experience it will go to avoid discovery. The purpose of this study is to fill this gap and examine the dark side of IP.Hypothesis Drawing on conservation of resources theory (COR; Hobfoll, 1989), we hypothesize that IP is positively related to both episodic envy (EE; Duffy at al.,2021) and interpersonal workplace deviance (IWD; Bennett; Robinson, 2000). Next, we hypothesize that EE is positively related to IWD. Finally, building on our previous hypotheses, we expect IP to have an indirect, positive effect on IWD through EE.MethodWe collected survey data across three time periods utilizing Amazon's Mechanical Turk (MTurk; Burhmester et al., 2011), with IP and control variables (gender, age, race, and ethnicity) collected at Time 1, EE at Time 2, and IWD at Time 3. There was a minimum of 14 days between each wave of collection, and our final matched sample included 119 participants. FindingsUtilizing Preacher and Hayes' (2008) mediation procedure, our results provide support for our hypothesized positive relationships between IP and EE (B = 0.9699, .001) and between EE and IWD (B = 0.4283, .001). We found no direct effect of IP on IWD, however, we did find a significant indirect effect of IP on IWD through EE (b = .4154, SE = .1113, 95% CI [.2005, .6403]), suggesting full mediation and providing broad support for our hypothesized model

Olson, Jenny

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Jyl Kelley

Abstract Name: Waveform Play Space

One major purpose of this group is to form a collaboration between Music and Visual Arts at UWEC. A group of 4 students from Music, Photography, Graphic Communications, Illustration, Painting and Drawing will work with faculty mentors over the summer to translate sounds from nature that create interesting visual patterns in real time. The vibratons from those sounds will be the basis for developing an interactive installation envirment between Visual Arts and Music; Theater Arts. The resulting installation will be displayed publicly in the Haas Fine Arts Center Lobby in October 2022. This student/faculty team will work for approximately 10 hours per week during the summer and early fall to complete the project. Faculty includes Professor Jyl Kelley from Art; Design, Professor Gary Don from Music Theory, and Assistant Professor Mykola Haleta

Olson, Kai

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Kai Olson *Carl Lundgren* *Elizabeth Glogowski*

Abstract Name: Synthesis and miscibility characterization of stimuli-responsive polymers for applications in architectural coatings

Polymers are long repeating chains of atoms or molecules with applications as additives in a wide variety of products. Stimuli-responsive polymers change their properties when exposed to different environmental conditions such as temperature, pH level, and salt concentration. Controlling polymer structure through precise synthesis techniques directly determines the stimuli-responsive properties of these polymers. Stimuli-responsive polymers can be used as dispersants for titanium dioxide particles (TiO2) within architectural coatings, such as paints, primers, and stains. Titanium dioxide is an opacifier in architectural coatings, blocking light from passing through. By controlling the polymer environment, the stimuli-responsive polymers can improve the dispersion of titanium dioxide, lowering the amount of titanium dioxide needed in the coating while increasing the opacity of the coating. Lower amounts of TiO2 lowers cost for consumers as well as environmental impact from titanium mining and processing. Synthesis of diblock and triblock copolymers with controlled copolymer composition and stimuli-responsive properties using activators regenerated by electron transfer atom transfer radical polymerization has yielded smart polymers with observable switchable miscibility properties. Characterization methods of the properties of these polymers includes nuclear magnetic resonance spectroscopy, gel permeation chromatography, and pendant drop tensiometry. Nuclear magnetic resonance spectroscopy provides evidence of synthesis success and yield proportions by indicating which functional groups are present and whether stimuli-responsive structures have been synthesized. Gel permeation chromatography allows us to identify the polymer molecular weight and weight distribution, in order to predict the smart properties of each polymer. Pendant drop tensiometry provides data on interfacial tension at several temperatures, pH levels, and concentrations, to predict how the polymer will behave as dispersants for TiO2 in different architectural coating environments. Determining how stimuli-responsive structures and properties are related by polymer synthesis is essential to optimize materials for the dispersion of titanium dioxide in architectural coatings.

Olson, Maddie

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Psychology/Neuroscience

Author/Contributors:
Michael Wilson *Maddie Olson* *Haley Badger*
Tyler Crotteau *Rachel Johnson* *Pete Krizan*
Peyton Murphy *Anna Mutch* *Holly Reinertson*
Luke Silburn *Nolan Souders* *Emma Thomas*
Ciomara Tomas-Bautista

Abstract Name: The Next Generation of Super Heroes: Are Glasses The Future of Disguises?

Even a small change to someone's facial appearance, like wearing glasses, can negatively impact our ability to identify them, especially if we don't know them very well (Graham, D.L.; Ritchie, K. L., 2019). This study further explores how recognition of unfamiliar faces is affected by wearing glasses and whether a person's ability to form vivid images of faces correlates with their ability to recognize unfamiliar faces they have seen. Forty subjects from a regional midwestern state university were familiarized with a set of 20 images of white college-aged male faces, half with and half without glasses. This category of faces was used because university and state demographics suggest most subjects would have extensive experience recognizing them. Subjects saw each face for 3 seconds and rated how much fun they thought the person might be at a party. Subjects then performed a face visualization task. Finally, subjects' memory for the original faces was tested. The test contained new images of the previously seen faces and images of 20 new faces (half with and half without glasses). Of the previously shown faces with glasses, half of the test faces were of the same person with glasses (glasses/glasses) and half were of the same person without glasses (glasses/no glasses). Of the previously shown faces without glasses, half were of the same person with glasses (no glasses/glasses) and half were of the same person without glasses (no glasses/no glasses). Subjects indicated whether they thought the face was new or old. Subjects' accuracy at recognizing faces was the best in the non-switch glasses/glasses condition and the worst in the switch glasses/no glasses condition. Additionally, wearing glasses negatively impacted subjects' ability to recognize a previously seen person, even in the glass/glasses condition. Vividness ratings did not correlate with face recognition ability

Olson, Rebecca

Institution: *NC - North Carolina State University*

Discipline: **Biology**

Author/Contributors:
Rebecca Olson *Eli Benbenek* *Catherine Edbrooke*
Tiffany Brocco *Lisa Paciulli* *David Watts*

Abstract Name: **First study of a mother aye-ayeðs (Daubentonia madagascariensis) anxiety behaviors peripartum**

Anxiety is a negative psychological state induced by stress triggers that can be seen in animals in the form of repetitive, rhythmic movements known as stereotypies. Primate mothers face anxiety due to birthing, infant health, and social relations. In this study, a mother aye-aye (Daubentonia madagascariensis) was observed to assess anxiety behaviors. It was hypothesized that the behaviors would change over time. With Duke IACUC approval, Pelco IMM12027-1S cameras were placed in a Duke Lemur Center (DLC) aye-aye mother's enclosure to record her activity. Over three days peripartum, three hours of footage (12:00-15:00) were viewed, and continuous focal animal sampling was used to note the time, duration, and type of repetitive scratching, grooming, etc. Data were then analyzed using a Kruskal-Wallis Test and a sample means test. The results showed that the day before birth, the mother repeatedly constructed and deconstructed nests three times more than engaging in any other behavior (ns), while on the day of birth, the mother groomed and scratched herself a lot (n=80x, n=62x, respectively, ns). The day after birth, the mother was hyper-alert (n=12x). Thus, the hypothesis was supported as the mother exhibited signs of anxiety by engaging in different stereotypies over the three-day period. While limitations such as a small sample size (n=1) and possible abnormal parturition behavior are evident, this study is the first to examine maternal anxiety in aye-ayes. The results can help husbandry staff create more comfortable environments for the rare and difficult-to-see captive aye-ayes.Funding generously provided by NC State's Provost's Professional Experience Program

Olvera, Miranda

Institution: *TX - Tarleton State University*

Discipline: **Social Work**

Author/Contributors:
Miranda Olvera,
Emma King,
Hannah Reeves

Abstract Name: **Adult Perception on Outcomes of Child Custody Cases**

Custody cases are meant to find the best possible option for the child, the process the child experiences lead to negative mental developmental outcomes.Throughout the family court process the families often face challenges that may consist of stress, role confusion, financial struggles, depression, anxiety and many transitions and changes to their everyday lives. One major obstacle for many families that have to deal with family court orders are the financial overloads placed on families. Private information often causes tension in families and households. This mixed methods study focuses on adults who have experienced a child custody case at any point during their childhood using a pre-developed Perception Survey. The survey consisted of 15 questions including demographic, multiple choice and open ended. Twelve articles were reviewed by the student researchers focused mainly on parental alienation, including factors associated with child custody cases and family court proceedings and how they affect the child involved.The student researchers used the literature review to aid in developing their research. This exploratory study explores the effects of child custody cases on mental development of children. The student researchers plan to study the impact of child custody cases by identifying the mental development outcomes of adults, who were a part of a child custody case. The student research group developed the following research question: (1) What are the mental development outcomes of children who were part of a child custody case? The study includes participants older than 18, who were involved in a child custody case when they were under the age of 18. Through purposive sampling, the researchers survey 75 participants to gain a better understanding of their perception of their childhood experiences during their child custody case.

Olvera-Gonzalez, Alonso

Institution: *CA - Occidental College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alonso Olvera-Gonzalez

Abstract Name: **Food Restriction and Stress: A Rat Model of How Restricted Food Intake Affects Stress Resiliency**

The human body reacts the same to natural disasters, threats of violence, and bodily injury as it does to work pressure, financial difficulties, and traffic jams – which are now quotidian in most societies. Modern environments constantly present the individual with stressors, priming many for continued activation of their stress response system. In laboratory rats, exposure to a previous stressor leads to decreased stress resiliency when exposed to subsequent stressors, displayed by higher acoustic startle responses. Severely restricted food intake triggers the same physiological responses as life-threatening stressors, and therefore should constitute as a stressor to the rats and cause a decrease in stress resiliency. An archival analysis of startle data revealed higher startle amplitudes among rats previously involved in adeprivation-induced hyperactivity (DIH) study compared to both naïve rats, and rats involved inother studies. A second study adding a food-secure control group to the DIH study was conducted to draw conclusions more confidently on the effect of food restriction on stress resiliency. Results of Study 2 do not indicate a significant effect of feeding condition on startle response, however. Further studies with larger sample sizes and more procedural details held constant need to be conducted before making any confident conclusions and extending results tohuman populations.

O'Meara, Katherine

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Katherine O'Meara *Dianxu Ren* *Ava M. Puccio* *Yvette Conley*

Abstract Name: **The influence of CYP2B6 variants and administration of propofol on patient outcomes after traumatic brain injury**

A traumatic brain injury (TBI) is a disruption in normal brain function due to disturbance to the head. These injuries are usually devastating; leading to lifetime disability or early death, with considerable variation in patient outcomes. A treatment commonly used in these patients is sedation, usually with an opioid or propofol, with potentially life-threatening complications as a result. The cytochrome P450 enzyme CYP2B6 is involved in the biotransformation of many drugs, including those used for sedation. Studies have found that variants of CYP2B6 can lead to decreased systematic clearance of propofol. This study aimed to investigate the relationship of the CYP2B6 polymorphism and patient outcomes after TBI while also considering propofol administration. There have been no investigations regarding variation in the CYP2B6 gene and patient outcomes after a TBI, warranting a need for a study of this nature. This study used data and biospecimens from a prospectively conducted study through the Brain Trauma Research Center in the Department of Neurosurgery at the University of Pittsburgh Medical Center Presbyterian Hospital. Inclusion criteria for this study included: a severe blunt TBI, Glasgow Coma Scale score 3-8, and not following commands. Collection of the drugs admitted to each patient was abstracted from the electronic medical records. The *6 polymorphism of CYP2B6 was genotyped using Taqman Allelic Discrimination of two single nucleotide polymorphisms (rs2279343 and rs3745274). Neurological outcomes were evaluated using the Glasgow Outcome Scale and Disability Rating Scale. 440 participants were included in this study. Individuals with the rs3745274 TT genotype and rs2279343 GG genotype were more likely to have worse outcomes. This could be due to decreased metabolism or systematic clearance of drugs. These findings suggest that CYP2B6 may impact patient outcome through drug metabolism and further investigation should be done regarding the role of CYP2B6 variants on TBI patient outcome.

Omer, Yusra

Institution: ***IL - Elmhurst University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Yusra Omer,
Kristina Tepic,
Jocelyn Rosales,
Angel Salgado,
Kaleb Goodlow

Abstract Name: Virtual Observation Does Not Magnify Perception of Performance

Previous research has demonstrated that people perceive their actions as more substantial when they are being observed (e.g., Steinmetz et al., 2016). The goal of the present research was to test whether this effect emerges in a virtual setting. In light of previous research demonstrating that people can indeed share reality via virtual interactions, we hypothesized that people would report a magnified experience when being observed on Zoom. To test this hypothesis, undergraduates (N = 19) participated in an experimental session with an experimenter via Zoom. All participants completed a bogus smile judgment task during which they were either observed (camera on, share screen) or not observed (camera off, screen not shared) by the experimenter. The task was rigged such that performance and performance feedback was constant across participants. After the smile task, participants answered questions about their experience completing the task and estimated how well they performed. Although participants did correctly follow the instructions stipulated by the manipulation, they did not report feeling more observed in the observed condition relative to the unobserved condition. And, contrary to predictions, participants did not report feeling like they performed better in the observed condition than in the unobserved condition. Since virtual communication is now so prevalent, researchers should continue investigating this important question using a larger sample size (to increase statistical power), more nuanced dependent variables, and a fuller experimental design that allows for a direct comparison of the original in-person conditions alongside the virtual conditions.

Omran, Radwa

Institution: ***EGY - The American University in Cairo***

Discipline: Biology

Author/Contributors:
Radwa Omran,
Eric Mpingirika,
Asma Amleh

Abstract Name: Studying the downstream targets of miRNA "hsa-miR-130a-3p" as a promising diagnostic biomarker for the diagnosing of advanced epithelial ovarian cancer

Ovarian cancer is a group of diseases that develop in the ovaries or the related areas of the fallopian tubes and the peritoneum. Epithelial ovarian cancer (EOC) is considered the most common type of ovarian cancer. In order to diagnose EOC, miRNA biomarkers are used. Identifying biomarkers with high sensitivity and specificity for the diagnosis of cancer is a high priority in the research field. In this study, we investigated the expression of the downstream target of a molecular biomarker in EOC. The biomarker of interest is hsa-miR-130a-3p. It has been shown that hsa-miR-130a-3p is associated with advanced ovarian cancer. Different bioinformatics tools were used in this study, such as miRanda algorithm and Targetscan in silico tools. After that, the results were verified by using RNA obtained from human ovarian cancer cells. The regulation of the miRNA in tissues was examined using Q-PCR to see whether they are upregulated or downregulated in RNA of EOC tissues compared to that of non-cancerous ovarian tissues. The levels of the downstream target genes at the RNA and the protein levels were examined using western blot and the human protein atlas database. This study showed that hsa-miR-130a-3p has downstream targets that are being dysregulated in the case of EOC. This indicates that hsa-miR-130a-3p has the potential to be used as a biomarker in the diagnosing of EOC. However, this study used a small sample in investigating hsa-miR-130a-3p downstream targets. Hence, it is recommended to do more research concerning this biomarker.

O'Neill, Elsa

Institution: ***MT - Montana State University - Bozeman***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Elsa O'Neill *Margaret Eggers*

Abstract Name: Cumulative-risk assessment of exposure to well water contaminates, Boulder River Sub Basin, Jefferson County, Montana

Introduction: An estimated more than 23 million US households rely on private well water. Private wells are not covered by the Safe Drinking Water Act. The Environmental Protection Agency (EPA) does not regulate private wells. Arsenic and Uranium levels in Montana's Boulder River sub-basin private well and stream water has not been assessed. Therefore, risk associated with consumption of this water has not been assessed.
Objectives: Assess cumulative health risk from lifetime consumption of private well water in Boulder River sub-basin in Jefferson County Montana. Improve knowledge of water quality, resources and education on effects of consumption of well water.
Methods: Ground water information was collected from Montana's Ground Water Information Center (GWIC) website. Health risks were assessed in comparison to EPA health standards, using established EPA cumulative risk methodology. Literature on water quality in sub-basin was reviewed and utilized to achieve comprehensive understanding of water quality. Flyer about sub-basin's water quality prepared for local County Health Department.
Results: Average cumulative risk for consumption of water in sub-basin is 4.632 and 9.029 for tested wells and streams respectively. Any value exceeding 1.0 is unsafe for lifetime consumption. Additionally, 55.25% of streams and 11.84% of wells tested exceed EPA's maximum contaminant level (MCL) arsenic. 97.27% of streams and 94.74% of wells tested in sub basin exceed EPA's maximum contaminant level goal (MCLG) for arsenic. Uranium levels also exceed MCL: 50.77% of streams and 52.38% of wells tested exceed this limit. 96.92% of streams and 98.41% of wells tested exceed uranium MCLG.
Conclusions: Assessed risks and scope of contaminants in Montana's Boulder River sub-basin. Resource for relevant well owners was created. This resource could be applicable in other areas.

Ong-Tua, Valerie

Institution: ***FL - Florida Atlantic University***

Discipline: Education

Author/Contributors:
Valerie Ong-Tua

Abstract Name: Public Opinion on Florida's Parental Rights in Education Bill

Florida's Parental Rights in Education Bill prohibits public school teachers from instructing students in grades K-3 about sexual orientation and gender identity or, "in a manner that is not age-appropriate or developmentally appropriate," as stated by the Bill. It allows parents to choose how they want to introduce LGBTQ+ topics to their children and sue schools if they feel the policy has been violated. After Governor Ron DeSantis signed the bill in late March 2022, it has faced criticism from parents, students, and public officials alike, with opponents calling it the "Don't Say Gay" Bill. I hypothesized that there would be a difference in support of the Bill among individuals with and without K-3 children. To test this hypothesis, I wrote a 14-question online survey using Survey Monkey and collected data using Amazon MTurk. The sample for analysis consists of 196 adult respondents within the United States. The results show that there is a statistically significant difference in opinion about the Bill among people with and without K-3 children. In addition, I found a statistically significant difference among individuals who believe the Bill is beneficial and also believe that it could potentially increase suicide rates among LGBTQ+ youths. My results give further insight into the controversy of Florida's Parental Rights in Education Bill and show that there is a widespread prejudice and bias against LGBTQ+ individuals; however, more research should be done to further understand the impact of these differences in the long run.

Opoku-Owusu, Cleo

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Psychology/Neuroscience

Author/Contributors:
Harrison Thiry *Farhiya Muhidin* *Cleo Opoku-Owusu*
DeNae Bube *Megan Dobner* *Brooke Bayerl*
Riley Kangas

Abstract Name: **Inversion of In-Group Favoritism in Adversarial Conditions**

Introduction: In-group favoritism (Sumner, 1906; Taijfel & Turner, 1986) is the phenomenon of giving preferential treatment towards individuals within the same perceived social group (e.g., age, race, gender).
Purpose: To experimentally assess whether in-group effects will negate and even invert when one party exhibits actions / demands that exceed the boundaries of a normal in-group association.
Procedure: See Appendix. We created a workplace scenario where the participant assumes the role of a co-worker. In the first segment, the participant is assigned to work with Mary, who requests some minor favors (baseline condition), and responds to the five assessment items shown in the Appendix. In the second segment, Brittany joins the workgroup, and does things that should go beyond in-group boundaries (inversion condition), and then the participant responds to the same five items.
Hypotheses: (1) sum of the five ratings will be significantly lower in the inversion (I) condition relative to the baseline (B); (2) participants who are around the same age as the scenario models will show a stronger inversion difference relative to those who are not; (3) because of its nurturing facets, the Big Five trait agreeableness will moderate the effect such that more agreeable participants will be less affected by the inversion effect.
Participants: 63 total from convenience and classroom samples, age ranging from 16 to 62. Results:Hypothesis 1: Baseline (mean=17.4, sd=3.0), Inversion (mean=10.8, sd=3.3), t=14.82 ($p<.00001$) Hypothesis 2: Same age (B-I mean=3.94, sd=3.6), different age (5.1 / 2.9), t=2.09 Hypothesis 3: Correlation Agreeableness vs B-I difference $r = -.24$ ($p<.05$) Discussion: H1 was supported, H2 was significant but in the wrong direction (non-matching aged participants showed a larger inversion effect), H3 was supported (more agreeable, smaller B-I difference). Follow-up research suggested for H2.

Ornelas, Solena

Institution: *CA - Dominican University of California*

Discipline: Political Science

Author/Contributors:
Solena Ornelas

Abstract Name: **How do Black Congressional Members Frame the Issue of Gun Violence? An Analysis of Black Congress Members, Black Constituents and Gun Violence**

Black Americans are disproportionately affected by gun violence. In fact, in 2022 Black Americans were projected to be ten times more likely than white Americans to die by gun homicide. As outlined by the United States Constitution, one of the responsibilities of Congress is to represent people within their district by developing and voting on legislation that protects constituents by making their communities safer. It is the responsibility of Congress to address the issue of gun violence because it is an issue that jeopardizes the safety of many American communities, as there are roughly 100,000 victims of gun violence each year. Research has shown that the race of a Congressional member impacts how they frame issues that constituents face in their districts, especially issues that disproportionately affect minority groups. Most scholarship focuses on whether minority Congressional officials are more concerned with minority issues. Through researching Black Congressional members' communication surrounding gun violence, this thesis will fill a gap in the literature by focusing on how Black Congressional members specifically frame the issue of gun violence, an issue that disproportionately affects Black American citizens. This thesis asks the question of how members of the 117th Congress, who identify as Black, frame the issue of gun violence. Using content analysis, this thesis will analyze speeches, press releases, and social media of Black members of the 117th Congress. This thesis will contribute to the literature about how racial identity affects how elected officials frame issues, specifically issues that pose more of a threat to people of color.

Orquiz, Hashel

Institution: ***TX - The University of Texas at El Paso***

Discipline: Biology

Author/Contributors:
Hashel Orquiz

Abstract Name: Systematics of the Southwest Desert Genus Hebecarpa (Polygalaceae)

Phylogenetic analyses of poorly known groups of plants using molecular markers can provide insight into into species limits and biogeography, which in turn have conservation implications. Native to the Southwest U.S. and Mexico, plants in the genus Hebecarpa are small, perennial herbs with ornate flowers and winged fruits. The level of variability in form within species with disjunct distributions in the southwest have led to some taxonomic uncertainties. Phylogenetic studies recently separated Hebecarpa from Polygala s.l. however not much is known about the intrageneric evolutionary history of the group. This research aims to describe some phylogenetic relationships within Hebecarpa and to test hypotheses of species limits in the genus using molecular data. Field collections were made of several species in the genus, some from disjunct populations of with widespread distribution. DNA was extracted for PCR and sequencing of the nrDNA ITS and cpDNA trnL-rpl32 region. Phylogenetic analyses using Maximum Likelihood and Bayesian methods were used to analyze the molecular data. The results of this study provide evidence that there is genetic divergence between disjunct populations of H. barbeyana, indicating potentially disparate evolutionary lineages and the presence of cryptic speciation across disjunct populations. Polygala magdalenae was found to be nested within Hebecarpa, supporting its taxonomic status within Hebecarpa. These results will be used to inform taxonomic revisions, species delimitation and further studies using genomic data with a more comprehensive sampling of species from the genus.

Orta, Jackson

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Jyl Kelley

Abstract Name: Waveform Play Space

One major purpose of this group is to form a collaboration between Music and Visual Arts at UWEC. A group of 4 students from Music, Photography, Graphic Communications, Illustration, Painting and Drawing will work with faculty mentors over the summer to translate sounds from nature that create interesting visual patterns in real time. The vibratons from those sounds will be the basis for developing an interactive installation envirment between Visual Arts and Music; Theater Arts. The resulting installation will be displayed publicly in the Haas Fine Arts Center Lobby in October 2022. This student/faculty team will work for approximately 10 hours per week during the summer and early fall to complete the project. Faculty includes Professor Jyl Kelley from Art; Design, Professor Gary Don from Music Theory, and Assistant Professor Mykola Haleta.

Ortega, Joshua

Institution: *CA - California State University - Long Beach*

Discipline: **Education**

Author/Contributors:
Shuhua An,
Julianna De Joya,
Joshua Ortega

Abstract Name: **Analyzing Interdisciplinary Teaching on Utilization of Math and Health Children's Books to Support Diverse K-8 Children?s Math Learning in Urban Classrooms**

This project aimed at 1) analyzing pre-service teachers' interdisciplinary teaching using math and health children's books and 2) identifying difficulties and challenges in a diverse learning environment with this interdisciplinary approach in urban K-8 classrooms in Southern California. About 78 pre-service participants from three math method classes participated in this study. Data collection includes pre- and post-questionnaires that assess their disposition and knowledge of interdisciplinary teaching, their creation of math and health children's books, and their reports of fieldwork teaching from the children's books. Data analysis includes both quantitative and qualitative methods. Quantitative methods were used to analyze the differences in pre-service teachers' disposition, knowledge of interdisciplinary teaching, children's math skills, health awareness and their disposition toward STEAM learning. Qualitative methods were used to analyze the approaches of interdisciplinary teaching used by the pre-service teachers, and to analyze the difficulties and challenges in a diverse learning environment. The preliminary analysis shows that the pre-service teachers were able to use a variety of ways in teaching math and health children's books in their fieldwork, and, as a result, their knowledge of interdisciplinary teaching and disposition were improved. There are some difficulties and challenges in children's learning: suggestions were identified for more effective interdisciplinary teaching, such as using manipulatives and teaching vocabularies before reading.

Orthous Inchauste, Maya

Institution: *GA - Georgia Institute of Technology*

Discipline: **Political Science**

Author/Contributors:
Maya Orthous Inchauste,
Courtney Crooks

Abstract Name: **The Impact of Ontological Security on Political Territorial Disputes**

This research focused on investigating how ontological security impacts and causes conflict between various nation-states. The study extended previous research conducted by the authors, examiningontological security in Russia and Ukraine, to the conflict between Hong Kong and China. Specifically, this study investigated how the creation and rupture of ontological security within citizens of disrupted countries potentially lead to political disputes between nation-states over sovereign territories. A qualitative content analysis (QCA) was performed on sources relating to ongoing events, such as Mainland China's aggression towards Hong Kong and the significance of the national and individual identities of the Hong Kong people. In this study, behaviors, associations with identities, and emotions experienced by Hong Kong people were extracted from 31 academic sources. The study's findingssuggest that strengthening ontological security through culture and religion was the most prevalent within our data set. When comparing these findings to previous research performed, both similarities and differences in ontological security between Ukraine and China, two distinctly different nation-states, were found. The observations discussed in this study can be used to understand better how to engage in conflict resolution for territorial disputes from a diplomatic, peace-keeping perspective.

Osaji, Chidera

Institution: *OK - University of Central Oklahoma*

Discipline: Psychology/Neuroscience

Author/Contributors:
Chidera Osaji,
Robin Mathew,
Benjamin Tayo

Abstract Name: **Machine Learning for Diagnosis of Traumatic Brain injury and Developing tools for Educating the General Public**

Identifying brain injuries in the preliminary stages through machine learning is important to avoid more complex situations in the brain. Long-term effects of brain injury can be associated with an elevated incidence of Alzheimer's disease and chronic traumatic encephalopathy. Machine learning is important and useful in avoiding the late realization of fatal brain injuries. The increased diagnostic accuracy of MRI (magnetic resonance imaging) technique reduces patient exposure to radiation by reduction of required scans. The goal of this research is to use machine learning techniques to detect traumatic brain injuries from MRI datasets using classification and clustering approaches. The preliminary stages involve importing the labelled dataset using python programming language and visualizing the topographical images. The next step is to convert the image data into numerical data. Then we will build a machine learning model for classifying the images either as normal or abnormal (indicates brain traumatic injury). The final step is to evaluate the accuracy of the model and calculate model's accuracy. We will present the results obtained so far.

Osakwe, Odilia

Institution: *OK - Tulsa Community College Northeast Campus*

Discipline: FAN Abstract

Author/Contributors:
Odilia Osakwe

Abstract Name: **Quantification and Stability Studies of Citrus Fruits- An Undergraduate Pilot Studies for Antioxidant Assay**

Antioxidants are oxidation-preventing agents that exert protective effect on important biological molecules through preserving function and promoting physiological balance. For the course-embedded general chemistry undergraduate research, citrus fruits with ascorbic acid (vitamin C) content were selected due to their notable antioxidant property. The primary aim is to quantify ascorbic acid (vitamin C) using select citrus fruits via acid-base and redox titration techniques. Instructor-guided proof of concept (POC) and pilot experiments will comprise 20% of coursework. Successful completion of the POC level qualifies for advancement to the pilot studies. Heat and time-based stability will be determined by groups of students as teammates in the class. Having learned the theoretical principles, a measure of achievement will base on ability to design and execute experiment according to set criteria, having quantified the ascorbic acid content and piloted the stability studies for the of the citrus fruits. The quantification result will guide classification as good, excellent or exceptional, based on FDA recommended daily allowance (RDA). The stability study outcome will inform advisory on storage -based potency of select citrus fruits at the various storage conditions. The reaction kinetics will of ascorbic acid degradation will also be elucidated. This serve as preliminary studies for the functional antioxidant assay.

Osborne, Katherine

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Psychology/Neuroscience

Author/Contributors:
Maiya Nate *Katherine Osborne* *Maggie Kaiser*

Abstract Name: Unconscious Bias or Trainable Attitudes? Training Implicit Biases That May Be Detected in the Implicit Association Test

Implicit Association Tests (IAT) are intended to measure beliefs that people are unable to admit (Project Implicit).Architects of the IAT acknowledge that results are onlyweakly correlated with measurable behaviors. The purpose of the current research was to determine whether a neutral implicit association could be trained into participants and subsequently be detected on an IAT. Participants were trained to associate negative words with angular shapes, and positive words with rounded shapes. Training sessions presented angular or rounded shapes, followed bypositive or negative words. Participants had to press “correct” or “incorrect” buttons depending on the shape and word association shown. After completing all training sessions, participants were given an IAT to determine whether they showed an implicit preference for rounded shapes. The IAT was created using the experimental design utilized by the IAT Website according to the methodological designs provided by the authors (Project Implicit) and replication studies (Jain et al, 2022). Data collection is currently ongoing.During the training session, trainees’ reaction times were tracked to measure the strength of the associations being developed between shapes and positive and negative stimuli.After completing the IAT, trainees’ scores on the rounded/angular shape IAT will be analyzed using the standard chi-squared analyses to identify the presence and strength of implicit associations.Additionally, using a X2 test of independence, trainees’ IAT scores will be compared to scores of untrained participants who complete the same IAT.If results indicate that trainees exhibit implicit associations between rounded shapes/positive words, and angular shapes/negative words, and do so to a greater extent than control participants, this will suggest that implicit associations detectable by IATs can be formed quickly, and with relatively few exposures to previously nonexistent associations.These findings hold implications for understanding implicit associations and contribute to conversations on developing bias awareness training.

Osei, Caitlin

Institution: ***IL - Loyola University of Chicago***

Discipline: Business

Author/Contributors:
Caitlin Osei

Abstract Name: How Social Media Discourses Shape Gendered Stereotypes of Women in Entrepreneurship

There is much evidence that entrepreneurship tends to be a male-dominated industry and that social media contributes to stereotype formation. This project uses content analysis of 34 various Instagram pages from women entrepreneurs. The analysis highlights what linguistic choices women entrepreneurs use in their social media posts. The captions are also classified based on their framing of women's entrepreneurship. Recent studies on women entrepreneurship have found that the Meso/Macro environment plays a role in the growth and development of women entrepreneurs. Taking an analytical gaze on these linguistic and visual choices may open a space to understand the gendering stereotypes of women in entrepreneurship. Additionally, may reveal the gender subtext that exists in the linguistic choices of women entrepreneurs. In this paper, I ask: what are the dominant social media discourses around women in entrepreneurship and how do the linguistic choices of female entrepreneurs reinforce or dismantle existing gendered stereotypes? For the woman entrepreneur, this analysis may highlight certain discursive practices that contribute to bias and inequality in the entrepreneurial space. For the linguist and philosopher of language, this analysis can reveal how discourse plays a role in stereotype formation in a given historically excluded group.

Osei-Wusu, Nana

Institution: *VA - George Mason University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Nana Osei-Wusu

Abstract Name: The Wining Game

The glorification of winning in intercollegiate sports over the years has taken an unhealthy turn. The National Collegiate Athletic Association (NCAA) has slowly shifted from a governance system based on enforcing its stance on amateurism to one that covertly endorses its slow shift into commercialism. This switch has directly affected the perception of collegiate sports, putting a significant amount of pressure on the coaches to produce winning seasons; thus creating a demand for athletes with high mental toughness. The objective of this study is to research the emphasis on mental toughness in athletes as the win-at-all-cost mentality continues to prevail within the intercollegiate sporting scene. Drawing from pre-existing literature to enhance our understanding of mental toughness. We will be able to determine what programs focused on supporting collegiate athletes will be beneficial, what should be included and how to properly tailor them to combat the negative implications established by a fixation on mental toughness.

Osmanski, Matthew

Institution: *SD - Augustana University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Matthew Osmanski

Abstract Name: Synthesis of Non-natural Amino Acid Catalysts

Catalysts are integral to improving the sustainability of chemical synthesis through the maximization of yields and subsequent minimization of reactant and energy consumption. Traditionally, transition metals have been utilized; however, concerns of toxicity, cost, and waste management have led to the development of organocatalysts. Mimicking proteins in biochemical systems, amino acids serve as a suitable scaffold for the synthesis of organocatalysts. With the decrease in toxicity from transition metals to amino acids comes an increased susceptibility to degradation; therefore, the synthesis of non-natural amino acids, specifically beta and gamma-amino acids with additional carbon atoms inthe peptide backbone, are of particular interest due to their decreased susceptibility to hydrolytic degradation. The additional carbon atoms in the peptide backbone also makes the synthesis of multifunctional monomers possible through the presence of multiple chiral centers. Here, a novel triamino acid monomer possessing an alpha, beta, and gamma-amino acid was synthesized in five steps.The activity of similar monomers in the catalysis of the Michael addition of aldehydes to nitroalkenes has been previously established in this lab. The future directions of this work are focused on the synthesis of dipeptides by coupling the triamino acid monomers and establishing whether enhanced catalytic activity is observed.

Ost, April

Institution: *MN - Anoka-Ramsey Community College*

Discipline: Biology

Author/Contributors:
April Ost *Elizabeth Gonzalez* *Leah Beise*
Marie Andersen *Paula Croonquist*

Abstract Name: **Identification and Annotation of Chico and Foxo Orthologs in Drosophila Species to Understand the Insulin/Tor Pathway Evolution**

The Insulin/Tor (IT) pathway is a crucial signaling pathway responsible for metabolism and glucose uptake, and has influence on longevity, fat/protein metabolism, and cell growth. Inaccurate regulation of this multi-functional pathway plays a key role in many well known human diseases, from diabetes to cancer. Chico– a gene involved in the IT pathway– encodes for a substrate responsible for positive regulation of the insulin receptor's (InR's) binding activity. Past research on network architecture has found that a gene's constraint level is affected by its connectivity and position in the pathway. Ponce et. all showed that IT pathway genes closer to the membrane evolve faster than downstream counterparts. We hypothesized that, due to its involvement in the crucial IT pathway, chico's orthologs are conserved in the target species D. elegans, D. ficusphila, D. miranda, and D. hydei, and their protein identities would decrease according to phylogenetic distance from the reference species D. melanogaster. However, we predicted that chico's selective constraint will be weaker than other pathway elements (i.e. FOXO) because of its upstream position. Chico's putative orthologs were annotated in all four target species and modeled with tools from the Genomics Education Partnership (GEP) pipeline, including the UCSC Genome Browser, tBlastn and Blastp searches, the Gene Record Finder, and the Gene Model Checker. The target species' protein alignments were examined, roughly spanning 45%-80% similarity to the reference species. The average protein identity percent was lower than FOXO's, supporting our hypothesis that position in the pathway is inversely related to selective constraint. Additional species genomes have been recently added to the GEP pipeline. Future studies across those genomes will strengthen our findings.

Oster, Jacob

Institution: *AR - Arkansas State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Benjamin Whitfield *Jacob Oster* *Robert Fleming*
Maureen Dolan *Shea Harris*

Abstract Name: **Engineering a Biological Habitat for real-time monitoring of plastic consumption in a Microgravity Environment Onboard the International Space Station**

Low-density polyethylene (LDPE) is a widely used thermoplastic polymer, with applications ranging from packaging to radiation shielding. LDPE is substantially less recyclable than other common plastics, such as polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polypropylene (PP), with a <5% EPA-reported recycle rate. Therefore, LDPE disposal is an imminent and growing environmental challenge on Earth, and similarly affects future needs for waste disposal during long-term space travel. Recently, Galleria mellonella, commonly known as the waxworm, was shown to degrade LDPE into ethylene glycol in offering a sustainable approach for plastic use and disposal. In July 2022, Arkansas State University sent an experiment to the International Space Station (ISS) to test if waxworms can degrade LDPE in a microgravity environment as a part of the NASA Student Payload Opportunity with Citizen Science (SPOCS) program. The engineering challenge required designing an instrumented waxworm habitat, that met NASA's operational constraints for ISS experiments, capable of maintaining waxworms during a ~30 day flight while monitoring their mortality, overall health, and LDPE consumption. Constraints included a standardized form factor, maximum power at 900mA/5V, and full environmental containment. The final module (10x10x15 cm) was instrumented with cameras for observing waxworm behavior during flight, as well as temperature sensors and humidity sensors, all controlled by a Raspberry Pi Zero microcontroller. A rapid design and testing approach was used during the design phase, utilizing 3D printing to quickly test and validate designs. This approach resulted in the build of an autonomously operated module to capture images and log temperature and humidity data. Real-time imaging capabilities confirmed the hypothesis that waxworms can survive microgravity stress and validated food and plastic consumption patterns and behaviors similar to earth controls. These results may enable new strategies in the future for improving sustainability and waste efficiency during long-term space travel.

Osterbauer, Geoffrey

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: History

Author/Contributors:
Geoffrey Osterbauer,
Madeline Sticha

Abstract Name: Teaching The California Genocide

This presentation covers a nine-day Project-Based Learning unit plan for twelfth graders on the California Native American Genocide of 1846 to 1873. The unit plan sequentially scaffolds the students' learning, allowing them to construct meaning as they interact with content in various learning tasks requiring critical High Order Thinking (Jigsaw activity, research, public presentations, etc.). Along with inculcating virtue to prevent future genocides, the desired outcome of the unit is for students to extrapolate what they know about the California Genocide into the modern day to take a stand as informed citizens on the current Native American reparations debate.

Oti, Amarachukwu

Institution: ***OK - University of Central Oklahoma***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Amarachukwu Oti *Erik Clary* *Rodrigo Roca*
Morshed Khandaker *Sadegh Nikfarjam*

Abstract Name: Assessment of thread microgrooving and nanofiber coating's impact on stainless steel bone anchors' immediate biomechanical and microstructural performance in vitro

Bone anchors are often used implants in orthopedic surgery on both humans and animals. Our research is now concentrating on increasing the longevity of orthopedic implants by surface treatment of implants with the goal of delivering facilitative molecules to the bone-implant contact. In the current work, we want to ascertain how the device's acute biomechanical and microstructural performance are impacted by microgrooving and nanofiber coating. Bone Anchor Unmodified (BA), Bone Anchor Micro-Grooved (MG), and Bone Anchor Micro Grooved with Nanofiber Coating (NF) are the three treatment groups that will participate in the trial. The study's parameters included histomorphometric and biomechanical measurements. Total microcrack area was calculated by adding together related and disconnected regions; measurements were compared to calculate microcrack area as a percentage of bone area in the ROI. Microcracked area has decreased significantly in Group samples of microgrooved and microgrooved- nanofiber mesh anchors compare to the intreated group. In general, bones with larger trabeculae thickness, lower structural model index (SMI), and higher bone mineral density (BMD) have higher pullout strengths. Despite this, due to their simplicity of application, less surgical exposure, and low morbidity, bone anchors are often employed in all bone areas in both human and animal patients. While cancellous bone and metaphyseal bone share some of these characteristics, cortical diaphyseal bone does not. The observed results indicate that Microgrooved and microgrooved Nanofiber mesh anchor groups have a prospective value. By showing an increase in total surface area contact at the bone-implant interface and a decrease in microcracked bone area, increased frictional forces resisting pull out should be expected.

Oti, Onyedikachi

Institution: ***OK - University of Central Oklahoma***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Onyedikachi Oti *Hussein Alizereej* *Sadegh Nikfarjam,*
Reuben Lane *Shannon Yeakley* *Morshed Khandaker*

Abstract Name: 3D Printed Segmental Bone Defect Treatment with Bioabsorbable Interlocked Nails

A segmental or long bone defect is a bone void or hollow that will not heal without treatment. Distraction osteogenesis, induced membrane, and vascularized fibular transplantation are some of the additional therapy possibilities. Another treatment method employs halo-type equipment to gradually shorten the limb until the ends of the segmental bone defect are close enough together for the body to mend the defect. The goal of this project is to test 3D printed polycaprolactone (PCL) bone scaffolds in vitro with agar-collagen hydrogel and magnesium (Mg) embedded PCL (Mg-PCL) intramedullary nail systems. The proposed technique for healing a rabbit tibial segmental bone defect is to integrate two biomedical systems: a bone scaffold implant and an interlocking nail system. Both the scaffold and the intramedullary nail were made of a bioabsorbable material that degraded slowly over time, allowing bone cells to fill in the gaps left by the implants. The scaffold implant was produced from polycaprolactone and was fabricated utilizing 3D printing techniques (PCL). The scaffold was subjected to a mechanical test to evaluate the stress and strain. A cell viability test was done using stem cells on agar-treated scaffold. We chose BMSCs for this experiment because of their ability to adhere to scaffolds for in vitro growth as well as differentiate into committed progenitor cells and expand. The interlocking nail adds stability. The scaffold reduces healing time. Load carrying throughout the recovery period due to the scaffold. This research addresses the technological challenge of manufacturing osteoconductive bone replacements paired with osteogenic cells and/or bioactive substances, as well as a progressively biodegradable interlocked nail system for critical size bone deficiencies.

Ott, Brennan

Institution: ***WI - Carthage College***

Discipline: History

Author/Contributors:
Brennan Ott

Abstract Name: The Repatriation of Cultural Heritage: The Idea of Ownership

Ownership is the fundamental tension surrounding the repatriation of cultural heritage, though the context of ownership has shifted throughout the history of cultural heritage. Cultural heritage is innately complex, with various international and national laws regarding cultural heritage. To add a further layer of complexity and confusion, each case of repatriation of cultural heritage has its issues and surrounding circumstances that make it challenging to create enforceable and universally applicable guidelines on how to repatriate cultural heritage. Overall, The first section is an overview of cultural heritage and repatriation efforts.Besides a basic overview, this section will also review the historical development of the idea of ownership as it relatesto the repatriation of cultural heritage. Furthermore, the second section of the paper will discuss the legal framework of the repatriation of cultural heritage by looking at the international agreements and laws meant to protect and regulate the movement and the acquisition of cultural heritage. The third section of this paper will provide case studies or examples of the repatriation of cultural heritage. In the same vein as the analysis of the case studies, the paper's final section will detail a few possible solutions to make repatriation a less divisive issue internationally, as well as answers to make repatriation overall easier.

Ottley, Carter

Institution: *UT - Utah State University*

Discipline: Communication/Journalism

Author/Contributors:
Carter Ottley

Abstract Name: Pandemic Experiences of Utah College Students Collected Through Oral Histories

COVID-19 is a global health crisis; the impacts will likely be seen for decades. It has led to technological and medical advancements. It has shown a lack of learning from previous infectious diseases and demonstrated profound political and cultural divides in the US. The COVID-19 pandemic affected the life of every individual around the world. Whether through contracting the virus, changing how they learned or worked, experiencing isolation, or feeling the economic impacts.This experience has separated people physically but allowed people to create connections through a collective experience. People, companies, and schools have found ways to adapt to the uncertainty associated with the pandemic. These methods include video conference calls, masks, and social distancing. Even though it was a universal experience, some individuals and communities felt disparate impacts. Through a series of oral histories collected from college students throughout Utah, I have explored what life was like throughout the pandemic for a variety of people. Oral histories allow people to tell their stories and share what is important to them. The pandemic impacted media and technology usage, interpersonal connections, and individual beliefs. Stories showed political unrest and polarization, mental health struggles, and isolation. The changing beliefs surrounding social distancing, masks, and vaccines were revealed in the stories collected. The oral histories have been transcribed and coded for these themes.This research is essential because it establishes some of the pandemic's impacts and how those are consistent throughout the population. It helps create an understanding of the unseen impacts of the pandemic and show how it will impact our individual life and our society in the foreseeable future.

Ottman, Brittany

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: Minority Status and Mental Health

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Otto, Andrew

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Physics/Astronomy

Author/Contributors:
Andrew Otto

Abstract Name: **Charge radius and mass distribution of deuteron quark-gluon plasma**

Contemporary nuclear models do not describe or explain mass distributions inside of atomic nuclei. Established particle physics is unable to precisely calculate any of the fundamental particle masses or mass ratios. Precise calculations of nuclear charge radii have been difficult to obtain using established nuclear models. A deuteron is a proton fused with a neutron. This project assumes that deuteron decoherence into a quark-gluon plasma involves the quarks and gluons losing their identities and merging together. It is also assumed that this decoherence involves charge completely dissociating from mass. A novel approach to calculating a deuteron quark-gluon plasma's charge radius and mass distribution is developed. A deuteron quark-gluon plasma is modeled as two interacting oppositely-charged surfaces. The positively charged surface is an hourglass shell. The negatively charged surface is a torus shell wrapped around the hourglass neck. The hourglass shell will be assumed to be inflated by standing waves. These standing waves are proposed to be virtual photons explained by quantum electrodynamics. A curious relationship between muon mass and the deuteron's torus shell mass is used as a starting assumption. This proposed deuteron model is an extension of a recently published proton model based on the circular Unruh effect, zitterbewegung effect, quantum electrodynamics, classical electromagnetism, and quantum chromodynamics. This project involves algebra and calculus that can be understood by undergraduate physics students. The long term goal is to apply this method to modeling larger nuclear structures.

Otto, Callie Jo

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Karisa Denig,
Callie Jo Otto

Abstract Name: **Analysis of PHYB Mutations Identified in a Genetic Enhancer Screen in Arabidopsis thaliana**

The plant Arabidopsis thaliana contains the genes LRB1 and LRB2 (Light-Response BTB 1 and 2) that encode proteins functioning as target adaptors in complexes that initiate degradation of the phytochrome red/far-red-light receptors. Plants containing mutations of both the LRB1 and 2 genes are hypersensitive to red-light, because there are increased levels of the phytochromes in these lines. Genetic screens were conducted in the Gingerich lab to identify mutations that increased the red-light hypersensitivity of LRB1 and LRB2 double mutant plants. Such mutations might occur in additional genes involved in red light responses. In several of the lines the putative "enhancer" mutations were found to be within the PHYB gene, which encodes the phytochrome acting as the major red-light receptor in Arabidopsis. Recent work has focused specifically on two of the enhancer mutant lines, each of which has a point mutation in the PHYB coding region which is predicted to change a single amino acid in the encoded phytochrome B protein. We believe these forms of phytochrome with the single amino acid change may have increased activity and we have been characterizing the effects of these mutations on light responses and phytochrome action. One of enhancer mutant lines also has a blue-light hypersensitive phenotype, and we have conducted genotype/phenotype co-segregation experiments to determine if the PHYB mutation in that line may also be responsible for that phenotype. Progress on these projects will be presented.

Oubkeo, Crystal

Institution: *CO - University of Northern Colorado*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Crystal Oubkeo *Kristofer Reiser* *Zoe VanEtten*
Stephen Mackessy *Aaron Apawu*

Abstract Name: **X-Ray Fluorescence Analysis of Elemental Composition of Rattlesnake Venom**

Snake venoms are complex biochemical mixtures, largely consisting of proteins and peptides, and have been the primary focus of studies on venom composition aimed at producing more effective antivenoms and discovering potential therapeutics. However, venoms also contain a variety of smaller organic compounds, metal ions and carbohydrates.Relatively little is known about these components. Venom can bequite distinct, havingvariation within the same species due to geographic location, diet, age, or sex. Few studies considerdiversity and relative abundance of inorganic compounds likemetals, asmany components are metalloenzymes. In the present work, X-ray fluorescence spectroscopy was used to analyze venom from over 100 Prairie Rattlesnakes (Crotalus viridis viridis) in a single population on the eastern plains of Colorado and compare levels between age groupsand sexes. Additionally, venoms from other speciesin western Colorado were also characterized to determine levels of variation within and between species. High concentrations of sulfur were found in the venoms, particularly among male neonates C. v. viridis. Many proteins and peptides in the venoms contain multiple disulfide linkages, which is likely the reason for high sulfur levels. Calcium and zinc showed no sex-related differences, and both were more concentrated in neonate venoms. In particular, potassium levels were high in both male and female neonatesbutfound at 1-2 orders of magnitude lower concentrations in adultvenoms. The differences in element concentration within species, between species and between age classes may be linked to age-related changes in diet. This work is providing novel results thatis settingdirections for future research into larger questions concerning differences in elemental composition of snake venoms globally. The use of X-ray fluorescence (XRF) spectroscopy canquantify numerous elemental concentrations in microgram amounts of venom, providing a versatile and convenient analytical method to compare withinand between species variation.

Overlaur, Leigh Ann

Institution: *GA - Valdosta State University*

Discipline: **English/Linguistics**

Author/Contributors:
Leigh Ann Overlaur

Abstract Name: **The Sardonic Destruction of Seduction: Examining the Beguiling Behavior Against Literature's Fallen Women**

The scandalous women portrayed in nineteenth-century literature are represented in simple societal constructs, yet the author's approach to these concepts makes the stories controversial and irrational. The presentation of misbehaving women holds many complexities, but only a few do it so analytically engaging: Gustave Flaubert's Madame Bovary; Leo Tolstoy's Anna Karenina; Thomas Hardy's Tess of the d'Urbervilles; and Edith Wharton's The Age of Innocence. Nevertheless, the author's gender seems to play a role in presenting the female portrait and psyche. The aforementioned male authors illustrate their infamous women as too vulnerable, naïve, and possessing a propensity of hysteria during their fall from grace. The male gaze places these titular characters in compromising situations that lead them to be seduced. As a result, they are affected by the temptations surrounding them, which ultimately morph their selfhood around the dominance of men. In contrast, Edith Wharton features passionate and determined women who discover their autonomy. Wharton, unlike her male counterparts, focuses less on female sexuality and more on female empowerment, allowing her women to manifest their individuality without a man's influence. Correspondingly, the characters are not the villains of their stories, even though they are implied as such because of their improper lifestyles. The real culprit of all the travesties is the authors, shown in the negative motif in which they write their female characters. These novels, which were all written within seventy years of each other, prove that time alters the perspective of society and gender theory. As time progresses, the philosophy of authors seems to shift; their characters – especially the female ones – are represented in a more inclusive viewpoint that allows for a more progressive projection of women.

Overton, Zach

Institution: ***AL - Samford University***

Discipline: **Mathematics**

Author/Contributors:
Dylan Lee ,
Zach Overton,
Kwadwo Antwi-Fordjour

Abstract Name: **Modeling Allee Effect in an Aggregated Eco-epidemiological Model**

A continuous predator-prey model subject to the Allee effect, prey aggregation, and infectious disease in the prey population will be presented during this talk. We assume that the prey population grows logistically in the absence of predator species. We split the total prey population into two distinct classes: infected prey and susceptible prey. Mathematical preliminaries such as positivity and boundedness are investigated. The analysis of the dynamical behaviors of the proposed model centers on the numerical simulations in which the Allee threshold and disease transmission rate of the prey are the primary parameters. The biologically feasible equilibrium points are analyzed. We will discuss our findings with emphasis on the potential applications in conservation biology.

Owens, Joshua

Institution: ***OK - University of Central Oklahoma***

Discipline: **Art/Music History**

Author/Contributors:
Joshua Owens

Abstract Name: **"Where On the Soles of Your Feet May Tread": An Analysis of Fumi-e and the Repression of Christianity by the Tokugawa Shogunate**

This research focuses on the appropriation of religious symbols of the Other. More specifically, the significance Japanese art, such asfumi-e,and the appropriation of Buddhist iconography by Japanese Christians in 17th century Japan will be examined. In this study, I argue that the use offumi-ein the ritualistic profanation of Christian icons conducted by officials of the Tokugawa Shogunate was to maintain social order in the face of the Jesuits' infiltration of Japanese society. While the Japanese political elites transformed Christian icons into objects of scorn, underground Japanese Christiansappropriated Buddhist icons to conceal Christian worship.First, a brief summary of 16thcentury warring states period, which divided the country into numerous competing factions, will be provided. Second, the effects of the Jesuits' presence and their conversion of severalDaimyo, or feudal lords, will be examined.Third, I will discuss the initial repression of Christianity, during which the missionaries were expelled from the country, and demonstrate the significance of the spectacular profanation of Christianity throughfumi-ein maintaining social stability under the Tokugawa Shogunate. Fourth, the use of Buddhist iconography, specifically Maria-Kannon statues,in clandestine Christian worship by underground Christian sectswill be addressed.This research makes use of scholarship on the social significance of public spectacles, and art historical literature.The importance of this study is that it demonstrates the fluidity of religious icons generated by specific political and social contexts.

Owens, Julia

Institution: *WI - Carthage College*

Discipline: Biology

Author/Contributors:
Julia Owens

Abstract Name: **Facultative interactions between ants, aphids, and black-eyed pea**

This study is the first exploration of ecological relationships between ants, aphids, and black-eyed pea (Vigna unguiculata).Black-eyed pea produces nectar in extrafloral nectaries (EFNs), on stems and leaves. EFNs attract ants that consume EFN nectar and protect plants from herbivores. This ant-plant facultative mutualism can be disrupted when aphids are present. Aphids are phloem-sucking herbivores that provide sugar to ants by excreting “honeydew”. Aphids can parasitize the ant-plant mutualism by stealing the plant’s sugar and stealing protection from the ant “bodyguards”. Aphids colonized plants during the preparation of the field plot, but initial population size was low. After ants (Camponotus spp.) established themselves on plants in the field plot, aphid numbers increased very rapidly, and we observed aphid-tending behavior by ants. In addition to herbivores, the abundant aphid population attracted a variety of predatory insects. Presence of ants had a negative effect on shoot and fruit weight; means for ant exclusion treatments were higher than the ant inclusion treatments. Adverse outcomes for plants with ants likely relate to high costs of ant-tended aphids removing sugar from the plants. The lowest plant growth and reproduction was seen in plants with ants and sealed EFNs. Aggressive aphid tending behavior is likely on these plants since ants received no EFN-nectar. Interaction between ants and nectar effects on shoot and fruit weight showed a trend for less severe negative effects of ants when nectar was available. More research is needed to understand how interactions shift as ecological communities change because ants can be allies or enemies to EFN-bearing plants. Vigna unguiculata is a critical source of global food security in the face of climate change threats.This study may provide ecological insights for ways to employ agroecological approaches to increase yields of black-eyed pea in the future.

Owens, Meagan

Institution: *AZ - Northern Arizona University*

Discipline: Biology

Author/Contributors:
Alexanda Gibson *Jessica Guzzo* *Emily Luberto*, *Meagan Owens*, *Katrina Urrea*, *Megan Wilkinson*, *Karen Haubensak*

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After threemonths of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Ozeren, Neriman

Institution: *VA - George Mason University*

Discipline: Public Health

Author/Contributors:
Safa Yosufzai *Juliett Bonnah* *Basma Almansour,*
Aamna Sohail *Raghad Al-Wazeer* *Adriana Vanegas,*
Ishika Ahmed *Neriman Ozeren*

Abstract Name: **Identifying breast cancer education message preferences among Black college students using conjoint analysis.**

Black women have excessively high breast cancer mortality rates. This disparity is due in part to the higher incidence of aggressive breast cancer among Black women under the age of 40. Early-detection and early treatment lead to significantly lower mortality rates. However, sociocultural barriers, such as lack of perceived risk for breast cancer, impede adherence to breast cancer screening guidelines for young many Black women. Cancer education interventions that are focused on increasing knowledge about breast cancer, breast cancer risk, and breast cancer screening methods have been shown to be effective at increasing breast cancer screening rates. The purpose of study is to determine the most effective way to deliver culturally-relevant breast cancer education messages to young Black women via social media. Culturally-relevant breast cancer education messages in the form of social media posts were developed using the Intervention Mapping Framework. The messages are based on the constructs of the Health Belief Model, and previous qualitative research with the target population. Conjoint analysis will be conducted with a sample of Black college-aged women. We will assess the participants preference for message frame (gain frame vs. loss frame), message format (illustration vs. photo), and message source (Black female peer vs. Black female healthcare provider vs. healthcare provider of another race and gender). Regression Analysis will be performed to determine the most desirable elements of the messages. The results of this study will be used to finalize the cancer education messages. The messages will be disseminated via social media sights.

Paalman, Tiffany

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Paalman *Sam Frauenfeld* *Christopher Santiago*
Natalie Ford *Lee Watson* *Ian Leiker*

Abstract Name: **The effects of restoration projects on phosphorus concentrations throughout Manitowoc County streams and Lake Michigan**

Phosphorus poses an ongoing challenge to Lake Michigan. Excess levels cause algae blooms resulting in degraded water quality in near-shore waters. As local tributaries serve as important phosphorus sources to Lake Michigan, we analyzed phosphorus levels in two streams in Manitowoc County, WI—Centerville Creek and the Little Manitowoc River.These streams have historically exceeded Wisconsin DNR surface water phosphorus standards of 0.075 mg/l phosphorus. Each stream has undergone restoration near where they enter Lake Michigan in order to slow stream flow and reduce phosphorus loading into Lake Michigan.Each creek showed a different trend in phosphorus concentration along its length.Centerville Creek showed lower phosphorus concentrations within the restoration area compared to the upstream branches, although all significantly exceeded the WDNR threshold. North branch averaged 0.510 mg/L phosphorus, and the south branch averaged 0.430 mg/L.Sites within the restoration project averaged 0.307 mg/L. In contrast, no difference in phosphorus concentration was noted between the upstream and restoration sites in the Little Manitowoc River.This may be because this restoration was more recently completed (2020 vs 2012), or due to the surrounding land use as the Little Manitowoc River runs through the city of Manitowoc, while Centerville Creek goes through agricultural land. However, overall concentrations across the Little Manitowoc River were lower than any of the Centerville sites, with an average concentration of 0.071 mg/L, below the WDNR threshold, and rain events did not increase phosphorus as much as in Centerville Creek. Future work will focus on identifying future sources as well as continued monitoring to evaluate the success of these restorations and inform land use decision-making.

Pabian, Joseph

Institution: *GA - Georgia College and State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Trenholm Fahy *Joseph Pabian* *Elizabeth Schultz*

Abstract Name: **A Pilot Study Investigating Veteran Identity Using the Photovoice Technique in a Qualitative, Community-Based Participatory Action Research Framework**

Veteran identity has been defined as a Veteran's self-concept that derives from their military experience within a sociohistorical context. Reintegration into civilian life can be difficult, experiencing a "reverse culture shock" that can negatively impact many interpersonal relationships and result in experiencing negative feelings such as helplessness, isolation, and emotional disconnection. Understanding how Veterans define themselves in their civilian lives can give us insight that could bridge the gaps between them and their available support systems. We utilized a qualitative, community-based participatory action research (CbPAR) model where Veterans are empowered to use their voices to tell their stories and researchers serve to help communicate their stories to the community. We are using the photovoice technique where Veterans take pictures that represent the answer to the following prompt: What does being a Veteran mean to you? This study is part of a larger project using photovoice and lyric analysis to help define the "sights and sounds" of Veteran identity. Our Veterans will then be interviewed individually where they are asked questions to help the researchers understand the symbolism of the images relating to the prompt for them. Transcripts of the interviews are being analyzed to uncover common themes and elements that represent a definition of Veteran identity. Preliminary results of these analyses will be discussed after completion of our member-checking process, which helps establish external validity within the community. Our next aim is to present the images and our results in an immersive, interactive gallery experience to allow for the Veterans' stories to be told. We argue that without more emphasis on qualitative, CbPAR methodologies, research with special and/or marginalized populations, like Veterans, will continue to be more exploitative than beneficial and will further reinforce the distrust in scientists and clinicians already experienced by many in these populations.

Packard, Lexi

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Biology

Author/Contributors:
Lexi Packard

Abstract Name: **One Fish, Two Fish, Weird Fish, New Fish: Pycnodont Specimens from the Arlington Archosaur Site of Texas**

Pycnodonts are a group of extinct bony fish (Triassic to Eocene), with deep, narrow bodies and flat, bulbous crushing teeth. They lived mainly in shallow marine and freshwater environments. This study will focus on the teeth of Pycnodont fish collected at the Arlington Archosaur Site (AAS) from the Lewisville Formation of Texas (Late Cretaceous, 95 million years ago), which hosted a diverse assemblage of organisms as part of a deltaic ecosystem on the shoreline of the Western Interior Seaway. Three tooth plates, eight pharyngeal teeth, and about fifty individual dentary teeth were identified. The dentary teeth and tooth plates were cleaned with acetone and water and examined and photographed under a microscope at high magnification to identify different microwear features of the teeth. Microwear features are markings on the surface of the teeth such as scratches, gouges, or pits that allow for interpretation of diet in extinct species. The dentary teeth demonstrated several scratches in different orientations with relatively few gouges or pits observed. The purpose of this research was to describe the dental anatomy of the AAS pycnodont specimens and assess their likely dietary intake. The results described here further support previous interpretations of the environment and availability of hard-shelled or resistant prey.

Paddock, Jacob

Institution: *MA - Westfield State University*

Discipline: **Other**

Author/Contributors:
Jacob Paddock

Abstract Name: **Special collaborative murals project**

Little matters more to me than nature, mother nature, my nature, the nature of things hasalways captured my curiosity. Artists such as Wilhelm Theodor Nocken and Rebecca Livermore inspire my perspectives and embolden my artistic approach. Their work captures the scale and vibrant color usage, renewing me with a sense of wonder.I often start by creating inventive source photos and sculptures that are translated into a painted medium. While painting I employ a wet brush sketching method on the canvas to build a base layer that I methodically add onto, utilizing different brush sizes and texturing methods. Above all else I seek to feel connected with my paintings, occasionally using my hands as my utensils. My work incorporates raw emotions that become the closest to someone looking through my eyes, to understand my nature. Although my work primarily focuses on male mental health and the silent suffering we experience, I would be interested in collaborating on Equity/Diversity/Social Justice mural project. I would like to focus on the diversity of human existence and the endless possibilities to create beautiful murals with many perspectives and voices. I possess strong team-oriented skills, incorporating viewpoints and ideas of others to create a unique vision. I believe that I also possess leadership skills both from my role as a senior undergraduate student artist as well as qualifications as the Chief Music Director for WSKB which has me coordinating around two dozen DJs alongside the general manager to create a welcoming and diverse community. I look forward to this incredible opportunity.

Pagel, Ashley

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Ashley Pagel

Abstract Name: **Testing the Effectiveness of the Wisconsin Arch as a Barrier to Dispersal for Ordovician Gastropods in Southern Wisconsin.**

The Ordovician (485-444 million years) Platteville Formation crops out extensively across southern Wisconsin. The most fossiliferous Member is the Mifflin Member which has been the subject of several paleontologic publications for over a century. Recent collections in a previously unpublished quarry near the UW-Whitewater campus has revealed a unique gastropod fauna, including the ornate species Phragmolites triangularis, among at least six others. In order to test the effectiveness of the Wisconsin Arch (WA) as an undersea barrier to dispersal, this new faunal collection was compared quantitatively with 20+ other coeval quarries that also contain gastropod faunas. The Raup; Crick similarity index (0-1) was calculated for all sample pairs, with values greater than 0.95 indicating significant similarity and values less than 0.05 indicating significant dissimilarity. For a null hypothesis of no barrier effect for the WA, falsification would require significant dissimilarity index values of sample pairs across WA suggesting it was an effective barrier to dispersal. Values above 0.05 for any sample pair do not reach our rejection level and cannot falsify the null. Out of 350 possible comparisons, only 7 sample pairs are less than 0.05, thus the great majority of data suggests that the WA was not an effective barrier for the dispersal of gastropods, and that gastropods of the Ordovician has wide-dispersing planktotrophic larvae like those of today.

Pagenkopf, Ray

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Sociology**

Author/Contributors:
Ray Pagenkopf

Abstract Name: **Media presentation of Psychedelics in Historical and Contemporary Print News**

The introduction of psychedelics in the American public consciousness started in the 1950s and has continued to evolve. [LT1] This research uses content analysis of print media found via internet databases to understand this change and see what the contemporary media is saying about psychedelics. Specifically, I compare coverage of psychedelics in LIFE magazine during the 1950s-1960s to coverage in New York Times magazine from January 2020 to November 2022. These sources were chosen because they were and are widely read publications in the US. For both publications, all articles containing the terms 'psychedelics' and 'LSD' were included. For LIFE, the articles could appear anywhere, and for the New York Times articles in both the opinion and health sections of the paper were included. The themes in the data show that, in the past, the interest in psychedelics focused on the cultural impact of psychedelics, fear around their use, and the evolving legal and social problems around them. The was a specific interest in Timothy Leary and his impact in the way psychedelics were used as well as on Watson's trip to Mexico. LIFE magazine wrote two cover stories about psychedelics in this time period, and these two articles articulate the change over 9 years most clearly, from curiosity to fear. Currently, there is interest in the medical use and mental health use of psychedelics. This interest relates to the increased number of studies being done on psychedelics and their use in the medical field. There is also concern and noticing of increasing use of psychedelics (and all recreational drugs) among young people in the US. In the opinion section, there is a discussion about how and when psychedelics should be used, with some authors being for and some against recreational use.

Palen, Clare

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Economics**

Author/Contributors:
Andrew Lindaas *Grace McLean* *Clare Palen*
Haoran Zhu

Abstract Name: **Using Survey Data to Report on Low-Income Household Experiences Shopping at the Eau Claire Downtown Farmers? Market**

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. Administrative data on program utilization suggests that most SNAP households shop at the ECDFM using the MMP relatively infrequently. This poster presents data from surveys of SNAP shoppers at the ECDFM in 2022 (N=349) to learn more about their experiences using the program including what limits their shopping at the market and what might increase their ability to shop at the market. Our results indicate that the most significant limitations to shopping at the ECDFM were the market location/hours, SNAP benefits running out and just not remembering. Correspondingly, the most mentioned things that would encourage more frequent shopping at the ECDFM were expanded market locations/hours, a larger match amount and also being reminded. Among our other key findings are that the ECDFM MMP provides many benefits including reducing food insecurity among EC SNAP households. This poster is connected to another submitted poster analyzing a variety of administrative data from recorded transactions of SNAP shoppers using the ECDFM MMP.

Palenik, Karol

Institution: ***FL - Jacksonville University***

Discipline: **Music**

Author/Contributors:
Karol Palenik

Abstract Name: **An die Freiheit: How Programmatic Interpretation intersects with Politics in Beethoven's 9th Symphony**

Ludwig van Beethoven's Symphony No. 9 in D minor, op. 125 has historically been associated with politics, being utilized by various political organizations and entities since its premier. Central to the work's political viability and utility is a focus on its programmatic messaging which espouses unity and brotherhood. In light of recent waves of criticism that focus upon classical music, and more specifically, Beethoven's music, as symbols of Eurocentrism and elitism, this paper attempts to critically evaluate the work's rhetorical argumentation, considering it within the context of its famous (and infamous) reputation. By analyzing aspects of harmony, melody, and the manipulation of Schiller's text, this paper examines how the finale evokes three differing musical settings, each being associated with a particular culture and/or religion. In the treatment, juxtaposition, and overlapping of these musical settings, this paper offers how two differing interpretations of the work are possible: One which centers on the work's humanistic ideals, and another which imagines Eurocentrism inherent to its model. By focusing upon the finale of Beethoven's 9thsymphony in particular, this paper hopes to contextualize the intersection between art, artistic interpretation, and politics, and how we, as listeners and performers, engage in that intersection.

Palma, Dayja

Institution: ***TX - Tarleton State University***

Discipline: **Social Work**

Author/Contributors:
KC Morgan,
Dayja Palma,
Shailyn Kendrick-Dickerson,
Tania Reeves

Abstract Name: **Sustainability of Resources for College Food Pantries**

Over 40% of college students are food insecure. Students in need are 43% more likely to fall behind in classwork and drop out of college. Students with food insecurity are also more likely to develop severe mental health conditions like depression, anxiety, low self-esteem, and loneliness. This study seeks to explain what factors contribute to sustainability of resources in university food pantries. The purpose of sustainability research is to find new and efficient ways to meet the needs of students who are food insecure in college. The student researchers explore the issue of sustainability of resources within college settings and how it impacts the resources obtained by grants and donors. The student researchers developed the following question: What are the factors involved in the sustainability of resources within college food pantries? The student researchers used 16 scholarly journal articles to inform their research on the factors that contribute to the long-term sustainability of food pantries in institutions of higher learning. Researchers using purposive and snowball sampling to identify a minimum of 100 participants with the help of the public directories to complete the questionnaire.The student researchers identified three common concepts within articles: factors of sustainability of food pantries, barriers and obstacles to successful food pantry use, and pantry development. The information gathered from the articles assisted the student researchers in question development for their survey.This research aims to identify the factors in sustaining a college food pantry through increased use. This information is important in attaining the researchers' overall goal of aiding the Tarleton Purple Pantry in developing a plan to sustain resources through Tarleton State College's rapid growth in enrollment.

Palma, Emmanuel

Institution: *FL - Miami Dade College*

Discipline: Physics/Astronomy

Author/Contributors:
Emmanuel Palma

Abstract Name: **Deterministic Chaotic Behavior in Solar Radio Bursts.**

Solar radio bursts are an intense and sudden increase insolar radio emissions connected to solar flares. They are one of the extreme space weather events that eventually can affect the Earth's environment. The used data were solar bursts observed at radio frequencies recorded with the radio polarimeter of the INAF-Trieste Astronomical Observatory. Solar bursts observed at radio frequencies are classified depending mainly on their different phenomenology and often show fine pulsating temporal structures that involve a great variety of phenomena, including sinusoidal-like oscillations patterns, and repetitive outlines of fine structures such as train of drift bursts, which indicates a fragmentation process in the generating mechanism. The great diversity of such phenomena involves different explanations and theoretical modeling. In such systems, pure determinism is not expected due to a high dependence and interconnection of several parameters, making the evolution of these dynamical systems very sensitive to any variation in the initial conditions, which is the indication of a deterministic chaotic behavior. The aim of this contribution is to determine if the underlying process generating such events can be described as deterministic chaos. Consequently, we applied nonlinear dynamics theory and some of the fundamental tools of nonlinear analysis were used as the Lyapunov exponent, correlation dimension, local point-wise dimension, and Hurst exponent. In the analyzed data, nonlinearity is detected, and the dimension analysis gives some hints for a quantitative description of the time series associated with the selected radio bursts, which is the via to characterize the complexity of the related physical mechanisms generating such events.

Palmer, Alexander

Institution: *VA - Roanoke College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Wataru Ito,
Alexei Morozov,
Alexander Palmer

Abstract Name: **Social Synchronization of Conditioned Fear Requires Ventral Hippocampus Input to Amygdala**

Social organisms synchronize behaviors as an evolutionary-conserved means for thriving. Synchronization under threat benefits survival and occurs across species, including humans, but the underlying mechanisms remain unknown, due to the scarcity of the relevant animal models. Here, we developed a rodent paradigm in which mice synchronize classically conditioned fear response and identified an underlying neuronal circuit using chemogenetic inactivation. Mice synchronized cued but not contextual fear and synchrony was higher in males than in females. Inactivation of the ventral but not dorsal hippocampus or dorsomedial prefrontal cortex abolished fear synchronization. Finally, the disconnection of the hippocampal-amygdala pathway diminished fear synchronization. The synchronized expression of conditioned fear relies on the ventral hippocampus-amygdala pathway, suggesting that the hippocampus transmits social information to the amygdala to synchronize threat response.

Palmer, David

Institution: ***SD - South Dakota State University***

Discipline: FAN Abstract

Author/Contributors:
David Palmer

Abstract Name: An Exercise in Understanding the Research Process: What is the Greatest American Rock Band?

Most undergraduate students find the research process daunting and enter into any research project with great trepidation. Undergraduate preparation and instruction in the process of research varies across disciplines as does the nature of what constitutes research and scholarly work. Across multiple semesters I have used the following group-based research project as a way to introduce business students to "doing research." Students are asked to answer the research question "What is the greatest American rock band?" Typically, this is framed as a low stakes exercise focusing on process as opposed to outcome (e.g., there may be no right answer). It allows for as much (or as little) instruction in the research process as necessary. Groups are required to produce a scholarly paper and to make an in-class presentation. The exercise exposes the students to the rudiments of critical thinking and the scientific method. Specifically, they first need to define the research question (e.g., define "rock," define "American") and set boundary conditions. Then they need to articulate evaluation criteria. Next comes the important task of "finding materials" to use and evaluating their quality. Finally, they synthesize what they have found and attempt to answer the question. Generally, students enjoy the exercise and realize that they know more about doing research and writing in a formal manner than they originally thought. With this experience under their belts the students are in a better position to begin a project specific to their disciple. Although my use of this exercise with undergraduate students has been limited to business majors, it could be modified so as to introduce students in other disciplines to the process of "doing research," especially where a formal course sequence in research methodology may not exist.

Palmer, Ruth J

Institution: ***NJ - The College of New Jersey***

Discipline: FAN Abstract

Author/Contributors:
Ruth J. Palmer, Ph.D. *Jody L. Eberly, Ed.D.*

Abstract Name: Toward Change Leadership in Teaching and Learning: Leveraging Mentored Undergraduate Research into Rigorous Spiral Curriculum Designs

Today, all academic disciplines and professional schools are responding to the continuing demands to augment and amplify high-quality teaching and learning. Recommended approaches for faculty include mentored integrated high-impact practices, interdisciplinary collaborations in communities of practice, proficiencies in the use of adaptive technologies, and inventive program design. Correspondingly, undergraduate students are reaching beyond accustomed patterns of learning and life experiences, toward new academic; professional goals; they strive to cultivate the minds of the future (Gardner 2006), to manage the complexity and uncertainty of the global/local environments. It is apparent that only continuing innovative, and transformative program/systems design can effectively enable these parallel yet interrelated emerging aspirations. Further, the research literature suggests that transforming our accustomed approach to research, inquiry, and creative activities from just traditional individual/group activities to a rigorous spiral curriculum can open strategic pathways to faculty and students' collective achievements. This presentation aims to (a) share a proposed cross-year spiral curriculum design that elevates mentored undergraduate research approaches to a dynamic intersection of content, changing context, and process; (b) engage participants in a discussion of the possibilities and challenges associated with cross-level spiral curriculum design in disciplinary and professional schools, and (c) seed interest in this line of inquiry. As such, this presentation emphasizes the potential of collaboration in communities of practice with multiple implications: it builds on the successes of prior researchers and advocates strongly for faculty engagement in program design for continuous research thinking; and it prioritizes leadership in teaching and learning while elevating strategic thinking and its subset, foresight/futures thinking.

Palmer, Tori-marie

Institution: *GA - Georgia State University*

Discipline: **Political Science**

Author/Contributors:
Tori-marie Palmer,
Lakeyta Bonnette

Abstract Name: **Star Power: Views on Celebrity Activism**

This study examines public perception of celebrity activism. Celebrity activism is defined by the usage of a high platform, predominantly on social media, to promote social justice and/or advocacy. The study was two-fold.The study consisted of a preliminary survey to determine participants' familiarity with celebrities and social activism topics. Then, it followed with focus groups, each session with different members, that focused on a celebrity - either a musician or an actress - and the activism they partook in. The students were shown a piece of media that depicted the activism the celebrity engaged in.The study aims to find whether students of Georgia State University viewed a celebrity using their platform to support a cause as an effective use of their social standing. Questions such as 'should celebrities engage in celebrity activism?' and 'how effective was their campaign?' were asked of the students to gauge their opinions. This study wants to examine whether celebrity activism is an effective strategy to promoting social change. Topics such as Black Lives Matter and LGBTQ+ rights were discussed in the sesssions. Musicians such as Rihanna, Beyonce, and Lady Gaga were discussed. Also, actresses such as Angelina Jolie, Yara Shahidi, and Emma Watson were conversed about, as well.

Palmieri, Lauren

Institution: *PA - Susquehanna University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Lauren Palmieri

Abstract Name: **Evaluating the ability of native plant species to tolerate acid mine drainage and implications for phytoremediation efforts**

Acid mine drainage (AMD) naturally occurs in iron-sulfide aggregated rocks and becomes a greater issue in regions where coalmining occurs, where it's commonly known as acid mine drainage. Produced when sulfide-bearing material is exposed to oxygen and water and characterized by its low pH and high concentrations of heavy metals and other toxic elements, AMD causes severe environmental degradation, posing risks to human health, and contaminates surface, groundwater, and soils. The purpose of this study is to evaluate the extent to which native plant species tolerate acid mine drainage and implications for phytorestoration efforts. Phytorestoration emphasizes the demand for native and diverse plant species used to restore ecosystems and promote biodiversity and improve soil fertility of non-agricultural impacted sites. In this study, five species of native plants were watered daily, separated into three groups of either pre-AMD treatment water, post-AMD treatment water, or tap water from the greenhouse as the control. There are 40 plants of each species, separated into 3 groups of 12, totaling 400 plants. Growth rates and seed germination times are recorded weekly. It is hypothesized that species that are least affected by AMD will show similar growth when exposed to pre- and post-treatment AMD water. The results of this study could potentially aid in funding for future phytoremediation projects, as well as determining which species are most suitable for these conditions.

Pandey, Jatin

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alexis Peterson,
Jatin Pandey,
Dhivyashree Senthil Murugan

Abstract Name: Biological Investigation of Phenylboronic Acid Nitrogen Mustards induced apoptosis (Cell Death in Triple Negative Breast Cancer)

Triple Negative Breast Cancer (TNBC) tests negative for the presence of hormonal receptors such as progesterone and estrogen receptors and excess human epidermal growth factor (HER2 protein). TNBC is unaffected by hormonal treatments that target these three growth factors. After diagnosis, there is less time than other cancers to treat TNBC. These characteristics of TNBC result in having poorer prognosis among all types of breast cancer. Therefore, there is dire need for a better understanding of the cancer and of potential drugs. Based on previous research, we have concluded that two Phenylboronic acid nitrogen mustard prodrugs, CWB-20I45 and FAN-NM-CH3 are effective in reducing tumor sizes due to prodrugs' enhanced activity in the presence of hydrogen peroxide (H2O2). Prodrugs are initially inactive that are then turned into active compounds upon metabolism. Inside cells, these prodrugs cause DNA cross-linking that ceases DNA replication and leads to cell death, making them superior to common chemotherapy drugs. Cancer cells have higher levels of reactive oxygen species (ROS) such as H2O2. The prodrugs are thus more selective to cancer cells and less toxic to normal cells. A series of in-vivo experiments determined that the prodrugs are safe in mice. To understand the drug's mechanism inside cells, we are investigating biological pathways by looking at protein expression levels, which vary in drug-treated cells. These proteins include tumor suppressor p53. This was done using RT-qPCR technique to amplify RNA upon extracting mRNA between cancerous cells that are untreated versus drug-treated.

Panidepu, Srimanya

Institution: ***VA - Virginia Commonwealth University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Srimanya Panidepu

Abstract Name: Musculoskeletal Disorders of the Hands and Arms: Preventative Ergonomic Measures and Optimal Scaler Design for Dental Practitioners in the United States

Currently, there is a rise in work-related musculoskeletal disorders among dental practitioners in the dental field. The root causes that have contributed to musculoskeletal disorders (MSDs) in dentistry have included irregular working postures, repetitive movements, extended muscular contractions, and inept dental instruments and equipment. With these implications, there has been an increase in poor dental ergonomics leading to high unemployment rates, increased medical attention, and job dissatisfaction within the field. Among dentists and dental hygienists, the most common MSDs occur within the hand, wrist, and arm during procedures like scaling and root planing. Common disorders of these include Carpal Tunnel, Tendonitis, DeQuervain's, etc., which have been primarily caused due to repetitive wrist movements, forceful gripping and twisting of the hands, sustained hyperextension of the arms, and an extended load on the shoulders. The purpose of this meta-analysis is to provide recommendations for the classic hand-held scaler by developing a new, ergonomically efficient instrument for practitioners. Based on previous findings of studies, the most optimal instrument should have aspects such as light weight (around less than 20 g) with larger diameters (11-12 mm), cordless and ultrasonic features, tapered handles, and round shapes to be implemented into this novel scaler. Administering ergonomically efficient equipment and instruments within clinics for dental practitioners may help enhance the overall health and wellbeing of dentists, while ensuring successful oral care, accurate diagnosis, and effective treatments for their patients as well.

Pannu, Khushi

Institution: ***CA - University of the Pacific***

Discipline: **Environmental Studies**

Author/Contributors:
Khushi Pannu

Abstract Name: **How Non-Profits Can Help Residents Heal From "Tree Trauma" in Order to Implement Sustainable Initiatives in Low-Income Neighborhoods**

Low income neighborhoods in cities across the United States face moresevere environmental issues compared to their upper class counterparts, with air pollution being one of the urgent issues of our generation. In Stockton, California, the southern part of the city has someof the worst air quality as a result of redlining laws in the past, leading to aftereffects such as increasing asthma rates among children. Attempts to improve air quality in South Stockton by planting trees in neighborhoods have failed in the past, as non-profits and government officials would neglectthe trees unattended after planting them, resulting in incidents such as property damage. As a participant in California's College Corps Pilot Program, I work with a localnon-profit called Little Manilla Rising in their mission to rebuild trust within the community in order to improve the city's air quality by planting trees and properly care for them. Within our reasearch, we canvass South Stockton neighborhoods on a weekly basis and survey residents, asking if they would like a tree planted in their backyard, a tree care kit, and tree maintence by our organization for 2 years, all at no cost. We will use the data to upgrade supplies that are in demand for tree kits, determine how to gain the community's trust, keep track of all trees planted, and eventually garner enough support to advocate for environmental regulations in our city's laws. By April, I anticipate that the results will lead to an increasing rate of trust in non-profits by community members, at least a 10% increase in trees planted in our city since 2021, and increasing awareness of environmental problems in residents and how they can utilize their power to bring about change.

Pansoy, Amanda

Institution: ***CA - San Jose State University***

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Krishnaveni Parvataneni *Amanda Pansoy* *Rachana Dandamudi* *Sohail Zaidi*

Abstract Name: **Effect of Nitrogen Addition in Argon DBD Plasma on Rotational and Vibrational Temperatures**

Dielectric Barrier Discharge (DBD) plasma is a non-thermal, non-equilibrium plasma that is used in the medical field for wound healing and sterilization. Reactive Oxygen/Nitrogen Species (RONS) in plasma interact with water in the blood to produce hydrogen peroxide, and thus, accelerate the wound healing and sterilization process through the production of growth factors. To optimize the concentration of RONS, this study uses small percentages of Nitrogen (up to 5%) in Argon plasma, to see the impact on radical concentrations. The Argon Plasma was generated in a multi-electrode plasma torch, with Argon flow up to 15 slpm, and an AC voltage between 5 and 10 kV (20-40 kHz). The concept of the multi-electrode plasma torch was designed at San Jose State University. This design provides us control over plasma characteristics (i.e., gas, rotational, vibrational, and excitational temperatures, and radical concentrations) without changing the operating conditions. In the current work, the impact of Nitrogen addition was investigated by conducting emission spectroscopy on the plasma. An OceanOptics UV-IR Spectrometer was used to capture the emission spectrum, and SpecAir was used to extract information on the rotational/vibrational/excitational temperatures. Experiments show that the rotational and vibrational temperatures, along with intensity the emission lines present, are impacted by Nitrogen addition. Up to 30% variation in the vibrational and rotational temperatures was observed as the Nitrogen was added into the plasma. Excitational temperatures faced minimal change, as Nitrogen was added. Addition of Nitrogen changed the relative intensities of emission lines, particularly in the NO Band (225-275 nm), Nitrogen Second Positive System (N2 SPS) (330-380 nm), and the N2 II Molecular Line (391.05 and 427.38 nm). This presentation will quantify these relative changes to plasma temperatures as a function of added Nitrogen.

Papendieck, Katie

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: **Biology**

Author/Contributors:
Katie Papendieck

Abstract Name: **Analysis of Long Term Egg Viability in Tadpole Shrimp**

Ephemeral wetlands are temporary waterbodies with highly connective, dynamic ecosystems that offer invaluable ecological processes. These habitats operate fundamentally different from permanent waterbodies due to their natural, reoccurring cycles of desiccation. Found globally, these vulnerable ecosystems support a high diversity of species, each with distinct adaptations to the harsh, frequently changing aspects of this habitat--such as the understudied species: Triops longicaudatus. Triops have eggs thatrequire the cycling desiccation of an ephemeral habitat, and can endure an extended period of diapause, protecting themfrom a variety of adverse environmental circumstances. From this quality,Triopshave maintained a consistent exterior shape for eons and are top predators that succeed early on within the system, persisting through various significant habitat changes and metacommunity collapse during thehydroperiod. This ability has allowed for their survival in areas of extreme temperatures and drought, indicating a potential resistance to climate change impacts. However, more research onTriopsegg hatching and degradation rates is necessary, as there is currently limited understanding on how long the suspended diapause can last.This study recognizes this and consists of an observational experiment for the hatching rates of dormantTriopseggs over a 20-year span. The primaryobjective of this long-term researchis to initiate a layout for future observational sessions using eggs from the educational science kit, TOYOPS Triassic Triops.With a microscope and tweezers, 20 eggs are separated from sand packages and placed into vials labeled by hatch year, starting in 2022 and going until 2044. Vials are then placed in long-term storage until hatching analysis on thedesignated year. Establishing atimeframe for egg diapause is critical to better evaluate the vulnerability ofTriops longicaudatus,especially considering the ecological impacts and potential preadaptations the species may have to mitigate consequences of climate change on ephemeral ecosystems.

Parce, Sydney

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Sydney Parce,
Kevin P. Klatt

Abstract Name: **Evaluating Motivating Operations and Patterns of Preference Displacement**

Stimulus preference assessments have been used to predict likely reinforcers, which often include edible and leisure items. Past research has shown that preference for a particular class of stimuli (e.g., edible items) can displace (show a disproportionate preference) another class (e.g., leisure items). Previous studies have investigated preference displacement of different classes by first conducting single-class preference assessments and then combining the most preferred items from each single-class assessment into a combined-class preference assessment (e.g., leisure vs. edible). The results of these studies have contradicted each other in that at times edible items displace leisure items or vice versa. Therefore, the purpose of this study is to further investigate motivating operations(motivation) and the extent that it influences preference displacement.

Parfeniuk, Jenna

Institution: *MN - University of Minnesota - Crookston*

Discipline: **Biology**

Author/Contributors:
Tsebaot Getachew *Delainey Lancaster* *Jenna Parfeniuk*
Madeleine Shwaluk

Abstract Name: **General Microbiology Students Searching for Antibiotics in Minnesota's Wetlands**

As antibiotic resistant pathogens continue to emerge, there is a dire need for the discovery and development of new antimicrobial agents. In Fall 2021,University of Minnesota Crookston General Microbiology students collected soil samples from wetlands of Northern Minnesota. They isolated and characterized the microbes to see if they have antimicrobial activity. Nineteen students were able isolate cultures that showed antimicrobial activity against the safe relatives of the ESKAPE pathogens. The current aim of the research is to conduct a longitudinal study to isolate and identify antibiotic-producing bacteria from bogs and fens collected from the previous student work. We hypothesized that some of the pure culture isolates would produce antimicrobial substances and show inhibition against the ESKAPE safe relative pathogens. Procedures followed the general protocols of the Tiny Earth-Studentsourcing Antibiotic Discovery Initiative. Soil samples were further analyzed using standardized techniques to identify the presence of potential antibiotic-producing microorganisms. Bacteria from these samples were transferred to isolates and tested against ESKAPE pathogens to show signs of antibacterial activity. Streak plates were created for all isolates showing antibacterial activity and incubated at room temperature to further separate the microorganisms to purity. This process was repeated until cultures reached purity. Pure isolates were then tested against ESKAPE pathogens to demonstrate inhibition. Pure isolates that showed inhibition underwent chemical fixation using acetone. Further testing is needed to isolate and extract the antimicrobacterial component. Further characterization of the twelve pure isolates that have antimicrobial activity will be reported. Findings from this research could aid in the development of antibiotics with new antimicrobial properties that can fight off pathogens resistant to current medications.

Parikh, Anishka

Institution: *PA - University of Pittsburgh*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Anishka Parikh,
Angela Hinchie,
Jonathan Alder

Abstract Name: **Designing an Inducible Telomerase RNA**

Telomeres are the protective DNA caps located at the end of eukaryotic chromosomes and are made of thousands of TTAGGG repeats. Telomeres are essential for suppressing the DNA damage response and the ends of linear chromosomes and protecting critical gene information from being lost when genomes replicate. Telomerase is the enzyme responsible for maintaining telomeres and is dependent on the expression of two genes: TERT which encodes the catalytic reverse transcriptase portion synthesizes de novo telomeres and TERC, which encodes the telomerase RNA template (TR). A mutant version of TR, termed AU5, changes the template sequence to ATATAT instead of the canonical TTAGGG and is toxic when expressed in cells. In order to generate a conditional system that would enable the generation of stable cell lines that express toxic non-coding RNAs, we used structure-guided design and placement of loxP sites within the TR sequence. LoxP sequences are recognized by Cre recombinase which catalyzes the recombination of two loxP sites, and can be used for inversion, deletion, or relocation of the DNA between the two sites. Four loxP locations were tested in AU5 TR to determine which site tolerated the loxP sequence without disrupting TR function. We performed functional assays using flow cytometry and competitive proliferation assays to determine which loxP placement was tolerated. Design of our conditional construct will be discussed and we anticipate that this system will be useful for the generation of cell lines or animals that conditionally express toxic non-coding RNAs.

Park, Jiin

Institution: ***HI - University of Hawai'i***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Jiin Park *Kyoko Shirahata* *Kenji Kokatsu,*
Troy Furutani *Allison Tsuchida*

Abstract Name: A comparison of concussion knowledge and attitude between college students in United States and Japan

Every state in the US has a concussion law that mandates concussion education among youth athletes, which is presumed to increase their knowledge and attitude.1 However, many countries have not implemented legal regulation on proper concussion management, despite the fatal risks of improperly managed concussions were proven. More severe forms of brain trauma has been reported in novice Japanese Judo athletes due to lack of knowledge on proper management.2 Therefore, the purpose of this study is to compare the concussion knowledge and attitude level between collegiate students in the US and Japan, where no concussion legal regulation exists. Methods: An English and Japanese-translated survey called modified Rosenbaum Concussion Knowledge and Attitudes Survey-Student Version (RoCKAS-ST) were used. Concussion Knowledge Index (CKI) and Concussion Attitude Index (CAI) were calculated from the survey responses for comparisons. An independent t-test was used for statistical analysis. Results: A total of 510 (US n=204, Japanese n=306) participants completed the survey. Of US participants, 116 identified as female (56.86%), 87 as male (42.65%), 1 as other (0.49%). Of Japanese participants, 43 identified as female (14.05%), 262 as male (85.62%), 1 as other (0.33%). The CKI of US participants was significantly higher than that of Japanese participants (US mean= 40.09, SD= 6.08; Japanese mean= 25.29, SD=8.15; t=22.16, df=508, p< .001). The CAI of US participants was also significantly higher than that of Japanese participants (US mean= 5.77, SD=2.41; Japanese mean= 3.56, SD=1.79; t=11.84, df=508, p< .001). Conclusion: The legal regulation in the US may have been a significant factor that contributed to higher concussion knowledge and attitude of US participants compared to Japanese participants.

Park, Sangmin

Institution: ***IA - St. Ambrose University***

Discipline: Mathematics

Author/Contributors:
Junyi Dong,
Sangmin Park

Abstract Name: Marginal distribution method to check a generalized additive model assumption

One important step in the regression analysis is to check whether the data fits the regression model in the null hypothesis. Most existing methods to check the model assumptions make use of the residuals. In certain situations, the existing methods are invalid and they are often unlikely to reject the wrong model assumption. To overcome this disadvantage, we proposed a new model checking plotting method and new test to check a generalized additive model (GAM) assumption. The new method is based on the weighted average of the difference between the estimators of the marginal distribution of the response variable. A large weighted average of the difference indicates that the GAM assumption may not be satisfied. The new method is always valid and works well especially in the situations when the existing methods fail.

Park, Yun Soo

Institution: ***UT - University of Utah***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Yun Soo Park,
Nicholas Alonzo Frost

Abstract Name: **An optogenetic model of hemispatial neglect permits real-time induction of rightward spatial bias**

Hemispatial neglect is a disorder of spatial processing characterized by inability to attend to stimuli situated contralateral to lesions affecting the parietal cortex. Hemispatial neglect is a poor prognostic indicatior following stroke. Critically, while neglect is often marked by loss of attention to visual or somatosensory stimuli, clincial tests in which patients replicate simple figures or draw from memory reveal that neglect is a disorder not of information storage or attainment, but of spatial processing. Specifically, while spatial information may be stored or represented on an allocentric coordinate system, it must be mapped onto egocentric coordinates in a process which depends on the posterior parietal cortex. Indeed, lesion studies in humans as well as in rodents have revealed the importance of this region in the expression of neglect. However, more recent work has revealed that spatial processing requires a distributed network and a number of connected regions are also implicated in neglect. Lesion studies by their nature are limited by the static permanence of the lesions. We sought to create an inducible model of hemispatial neglect using stereotactic delivery of AAV-halorhodopsin to the posterior parietal cortex in mice, permitting the reversible optical silencing of this region by light. We show that in the presence of green light delivered via an optic fiber, mice devlop a rightward bias. We will next utilize this inducible model of neglect while recording from large numbers of neurons in the dorsal hyppocampus or prefrontal cortex to understand how the PPC influences spatial processing during goal-directed navigation.

Parker, Jordan

Institution: ***MD - Salisbury University***

Discipline: **Communication Science and Disorders**

Author/Contributors:
Jordan Parker

Abstract Name: **Ridiculously Simple Idea**

The ridiculously simple idea that changed the landscape of Integrated marketing. This study analyzes Apple's "#ShotoniPhone" campaign from 2015 to present day on how they cultivated a ridiculously simple idea through Integrated marketing methodology and creative product launching. The campaign made its first appearance in 2015 on social media, billboards, and world art galleries to inspire consumers to engage in the latest iPhone 6 camera features. The campaign's success relied on Integrated marketing methodology and product launching expertise that was maintained solely based on consumer interaction. Implementing these strategies allowed Apple to better understand the likes of their target audience, how to effectively promote its product, and evaluate their business acumen. Companies worldwide have taken the ridiculously simple idea concept and made it their own, but nothing quite like Apple. Apple is a powerhouse in the technology field while offering simplicity, innovation and creativity.

Parker, Kelly

Institution: *CO - Regis University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kelly Parker *Madison Hand* *Rebecca Betjemann*

Abstract Name: **Development of Empathy Scales and their Relation to Personality**

This study assesses the relation between empathy and personality. It is being conducted as a pilot for a larger twin study we are starting this year. In order to do a twin study, we need to have succinct measures that also correlate with each other. Building upon that, this current study has two main goals. First, we will assess all measures used for both empathy and personality, to see if strong composite variables can be created using a smaller subset of items. Second, we will assess the variables with one another to determine if empathy is correlated with different personality traits. Previous studies investigating the relation between the big five personality traits and empathy have had mixed findings. In a study of nurses, the personality traits were able to explain 37.5% of overall variation in empathy capability, with empathy being positively correlated with conscientiousness and agreeableness, and negatively correlated with neuroticism (Wan et al., 2019). In Wakabayashi and Kawashima (2015), however, nearly no relation was found between personality traits and empathy, with only 2-3% of variance being attributed to personality traits. In Nettle (2007), agreeableness and extraversion were positively correlated with empathy. These differences in variance, as well as which personality traits are found to be significant, suggest more research into the correlations between empathy and the big five personality traits is needed. To measure personality, we used questions from the Big Five Inventory (Benet-Martinez; John, 1998; John et al., 2008; John et al., 2011). To measure empathy, we used the Toronto Empathy Questionnaire (Spreng et al., 2009). Data collection is ongoing, but so far 136 participants have completed the survey. We hypothesize that empathy will be positively correlated with agreeableness, as this seems to be the most consistent finding.

Parker, Mira

Institution: *WI - Carthage College*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Mira Parker

Abstract Name: **The Persistence and Change of the Senpai/Kohai Relationship of Native Japanese Speakers in the United States**

With the increase in globalization the need for understanding different cultures is on the rise. -The focus of this research ishow thesenpai-kohaihierarchical relationship that is essential for Japanese society translates into other cultures. Five 30-minute interviews concerningsenpai-kohaiwere conducted with young native Japanese people living in the United States. All the interviewees were graduate students who are Japanese language teaching assistants at a university in the Midwest. The questions each interviewee was asked were about their time living in Japan and the United States concerning thesenpai-kohairelationship. Through these interviews insight was gained about thesenpai-kohairelationship before and after the interviewees came to the United States. Based on detailed analysis of interview results, this study proposes that thesenpai-kohairelationship remains the same in practice among young Japanese people after they move to the United States. However, it fades away when native talk to non-native Japanese speakers. Furthermore, there seemingly is a significant change in terms of their attitude toward thesenpai-kohairelationship; that is, instead of relying on discerment politeness, the research found that after living in the United States, Japanese youth instead use volitional politeness to theirsenpai.In other words, they make personal decisions to choose when and who to be polite to, instead of using polite-forms as expected or as an obligation just because the person is older or more experienced. This research implies that when a person lives in a different culture, even if changes to their original culture cannot be seen outwardly, there may be internal changes taking place as the person adjusts to the new culture.

Parra, Andrez

Institution: *CA - Occidental College*

Discipline: History

Author/Contributors:
Andrez Parra

Abstract Name: **Food For Change: The Political Economy of Wheat Production and Migration in 19th Century Spain**

Spanish economic and agricultural history has, until recently, been defined by the “backward” state of Spanish industry in the 19th century. Recent literature has explored the roots of this narrative and increased focus on the dynamic nature of Spanish economic activity. Contributing to this trend in Spanish history, this project explores the relationship between wheat production and migration to explore economic growth in 19th Century Spain. Using Spanish and English language primary sources such as newspaper articles, census data, and agricultural records in combination with emerging economic and historical literature, this study finds that the growth of Spanish agriculture and industry was dynamically shaped by agricultural producers reacting rationally to increasingly globalized market and political conditions. This study further finds that Spanish economic growth was contingent on the seasonal migration of farmers within Spain and to former Spanish colonies. This analysis of wheat production reveals how historical narratives of economic growth can be better understood through a broader understanding of the decisions made by individual producers within society.

Parra Pulgarin, Salma

Institution: *CA - University of California - San Diego*

Discipline: Public Health

Author/Contributors:
Salma Parra Pulgarin,
Corinne McDaniels-Davidson

Abstract Name: **Contrasting the Social Needs and Circumstances of Hispanic/Latino and Non Hispanic White Patients in Southern California**

Societal inequities exacerbate the cancer health disparities between Hispanic/Latinos (H/Ls) and non-Hispanic whites (NHWs) in the United States. Thus, we compared the social and systemic life circumstances of H/L and NHW patients undergoing treatment at an NCI-designated cancer center in the southwest US. Via email we invited 5,901 cancer patients seen between 2018-2019 to complete a health survey. Social needs were compared between H/L and NHW patient respondents with Pearson Chi-Square tests using data weighted to the cancer center population.
A greater proportion of H/L patients (48.7%) reported household income <$50,000 than NHW patients (23%; $p<0.05$). A lower proportion (35.8%) of H/L patients reported living comfortably on present income compared to NHW patients (64.2%; $p<0.05$). Food insecurity indicators confirmed income disparities; 37% of H/L, compared to 7.6% of NHW, patients reported often or sometimes being worried their food would run out before they got money to buy more in the last 30 days ($p<0.05$). Likewise, in the last 30 days, 29.1% of H/L compared to 6.1% of NHW patients reported often or sometimes the food they bought just didn’t last, and they didn’t have the money to get more ($p<0.05$). Self-reported physical and mental health was lower among H/L patients compared to NHW patients. On a five-point Likert scale, 34.3% H/L patients rated their physical health to be very good or excellent compared to 50.8% of NHW patients ($p<0.05$). Similarly, 59.3% H/L patients rated their mental health to be very good or excellent compared to 66.6% of NHW patients ($p<0.05$). It's imperative that cancer centers address the systemic and social needs of H/L patients.

Parrent, Parker

Institution: *KY - University of Kentucky*

Discipline: Education

Author/Contributors:
Parker Parrent *William Wiseman*

Abstract Name: **Factors that Influence College Students' Mathematical Identity and Perceived Proficiency**

The nature of mathematical knowledge is loosely defined by Kean (2017) as an individual's belief of how mathematical knowledge is organized and the source, justification, and content of this knowledge. Students' beliefs about the nature of mathematics can impact many aspects of their academic and overall life pursuits, and can be influenced by a myriad of experiences. In this study, we specifically examine the beliefs and experiences of college students enrolled in College Algebra courses, as we know the course is a gatekeeper that often predicts students' graduation (Bailey, et al., 2010). We use the figured worlds conceptual framework in the learning of mathematical experiences, to understand the multi-layered components of identity in varying contexts (Holland, et al., 1998). To examine undergraduate college students' past mathematics education experiences, beliefs about the nature of mathematics, and experiences in a College Algebra course, pre- and post-surveys were administered in spring 2022. We had 50 participants complete both the pre- and post-surveys. The Likert-items ranging from strongly agree to strongly disagree include scales intended to measure perceptions of mathematics proficiency and sense of belonging in mathematics. The open-ended questions aimed to understand participants' past mathematics experiences, experiences in College Algebra, and beliefs about the nature of mathematics. Preliminary results of open-ended responses indicated themes such as affective factors (e.g., stress, confusion), achievement (e.g., success or failure), acknowledgement (e.g., feeling seen, participation) and application (e.g., careers, daily life) of mathematics. Pre- to post-survey comparisons demonstrate gender differences with female participants showing a positive increase in their self-perceived proficiency in mathematics with pre-data starting lower than male participants and post-data higher than males. This change suggests that perceived gains in proficiency are related to female students experiencing a more positive mathematics college environment, which could influence their mathematics identity.

Parrinello, Vianney

Institution: *FL - The University of Tampa*

Discipline: Art/Music History

Author/Contributors:
Vianney Parrinello

Abstract Name: **Potential Picasso Project**

Since Summer of 2019, when an alumnus presented the University of Tampa with a “thriftshop” painting signed“Picasso 1905,” Museum Studies and Chemistry students have collaborated on the“Potential Picasso Project” to conduct stylistic, chemical, and comparative historical analyses. This project conducts visual(physical)analysis of the object and, with the aid of past chemical research, establishes its creative process and material composition in order to determine whether it may be attributed to Picasso between 1900-1910.A close physical inspection of the artwork resulted in an estimated timeline of techniques and materials used to create the overlapping layers of pigment and paint. The materials consist of at least four to five layers made up of multiple types of pigments(oil,airbrush, and spray paint) with several differing brush sizes combined with a noticeably large use of pallet knife work. The estimated production process was at least several days to weeks due to the need for the oil paint to dry in between sections. This research is supported by data previously generated by the chemistry collaborators, who used a process called“InductivelyCoupled Plasma Optical Emission Spectroscopy”(ICP-AES/OES)to determine what kinds and how much of particular elements were used within a paint sample taken from the given object. These tests showed consistent uses of titanium dioxide(TiO2),which is notable due to the fact that titanium paints were not commercially available within the time that the piece is allotted as“1905”.The next steps will focus on Picasso's known processes and materials based on stylistically similar works from 1900-1910 (hisBlue and Rose Periods and early Cubism). From there, a comparative analysis against the subject work will be possible to determine whether or not it correlates to actual historical processes and materials used by Picasso in the early 1900s.

Pastierik, Remy

Institution: *PA - Duquesne University*

Discipline: **Biology**

Author/Contributors:
Remy Pastierik,
Nancy Trun,
Jill Peters

Abstract Name: **Screening Click Chemistry Compounds for Antimicrobial Properties**

Microbes are becoming a major health risk as antibiotic resistance and multidrug resistant bacteria increase. Over prescribing of antibiotics has aided in this public health threat of antibiotic resistance genes in clinically relevant bacteria. Without action antibiotic resistance genes can lead to millions of deaths annually. One way that the challenge of antibiotic resistance can be handled is through the development of novel antibiotics. In a pharmaceutical lab, fully functionalized small molecule probes (FFSMPs) were synthesized, using click chemistry, in order to be pharmacologically evaluated. The purpose of these FFSMPs is that they can rapidly identify new chemical probes and drug targets for the treatment of infectious disease, as target identification is a rate limiting step in antibiotic discovery. The pipeline of synthesis can allow for further testing including phenotypic screening, and target identification to create a library of possible novel antibiotics. The objective of this study is to create a pipeline for the development of FFSMPs to then be subsequently tested for antimicrobial properties. The current primary focus is the synthesis of novel compounds and phenotypic screening of compounds. Currently, 54 total FFSMPs are being tested using disk assay for sensitivity and minimal inhibitory concentration assays. These compounds are screened using both Escherichia coli and Bacillus subtilis to test their effects on both gram-positive and gram-negative microbes. The 54 FFSMPs have all been tested using the disk sensitivity assay and are all moving to phase two of testing, the minimal inhibitory assay. After these compounds are all tested the compounds will be further screened using clinically relevant bacteria.

Pastore, Vittorio

Institution: *VA - Virginia Polytechnic Institute & State U*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Juliana McIrvin,
Vittorio Pastore

Abstract Name: **Development of Squeaky DC, a modular and affordable 3D-printed educational quadruped**

Squeaky DC is an updated and more powerful version of TREC Lab's Servo Squeaky, a modular and affordable 3D-printed quadruped robot. Quadrupeds have diverse applications as research and educational tools, but the higher cost of similar quadrupeds prohibits their widespread use. Squeaky DC has been manufactured using 3D printing technology and materialsto reduce the overall cost as well as manufacturing time. Due to theuse of 3D printing, Squeaky DC provides design flexibility and can be easily modified without restructuring the whole design. The objective for constructing Squeaky DC is to enhance the usefulness of the earlier version for research and education by implementing the ability to perform more complex tasks such as running and jumping. In this work, the existing servo motors in Servo Squeakyare replaced with more powerful brushless DC motors in Squeaky DC, and Siemens NX CAD software isused to redesign the parts for overall improvement in the design of the quadruped. The new limb design isinfluenced by the anatomical structures of canine and primate limbs. This bioinspired design results in a greater range of motion and improved aesthetics. Several design iterations have been investigated to finalize the overall geometry and dynamics of the design of Squeaky DC. To ensure the reliability and functionality of the design, the final design of the prototype is subsequently manufactured through 3D printing with PLA+ material. Further, this quadruped robot will be programmed and extensively tested to prepare it for release as an open-source educational tool. In the future, Squeaky DC has great potential to beuseful for the exploration of fields such associal robotics and swarm/collaborative robotics.

Patel, Aahan

Institution: *CA - San Jose State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Bhavya Bellannagari,
Akhil Agarwal,
Aahan Patel,
Sohail Zaidi

Abstract Name: MATLAB Image Processing for 2D Traversing Plasma Device designed for Wound Healing and Sterilization

Non-thermal Dielectric Barrier Discharge plasma jets find applications in plasma medicine. In practice, these incident plasma jets are exposed to skin wounds; therefore, an effective scanning of the wound surface is required. In the current research, a plasma scanning system was developed and tested. Various wound images were provided for the system to scan with a plasma jet. For this purpose, a Logitech camera connected to a Raspberry Pi was used to capture the required artificial wound (printed on a piece of paper) image area. This information was relayed to a 2D scanning device that held the plasma jet to scan the targeted area. A MATLAB based algorithm was used to identify the wound area by isolating red color pixels by using a specified threshold value. Inbuilt MATLAB functions were used to identify the minimum and maximum x- and y-values of the wound pixels to generate a bounding box. The developed program rotates the image and regenerates this bounding box at 1- degree intervals, and minimizes the area. The developed software was tested to identify a leg wound image (1.4in x7.3in). The pixel color contrasts were used to mark the boundary around the wound that ended up as a rectangle (1.3in x 7.4in). This was within an accuracy of 94% of the targeted area. To identify the limitations of the imaging software, different wound images (oblong, square, irregular, circular) were tested. Low color contrast between the skin and the wound surface appeared as the main limitation for the software. This presentation will include discussion on the scanning software development, the DBD plasma jet generation, and the functioning of the 2D traversing device which was employed to scan wound surfaces.

Patel, Deep

Institution: *KY - University of Kentucky*

Discipline: Biology

Author/Contributors:
Deep Patel,
Jakub Famulski

Abstract Name: The Function of Tfap2 in the Development of the Ocular Anterior Segment.

The vertebrate eye has two main components the anterior segment (AS) and the posterior segment, including the retina, with both being essential to proper vision. The AS includes the cornea, lens, iris, ciliary body, and iridocorneal angle. It functions to properly collect and project light onto the retina. Anterior Segment Dysgenesis (ASD), a potentially blinding disorder, occurs when there is an abnormality in AS formation. The gene family tfap2 is essential for the development of the vertebrae eye. The tfap2 gene family encodes the protein Transcription Factor AP-2. Expression of this protein occurs in Neural Crest Cells (NCC). NCCs are vital for the formation of the Periocular Mesenchyme (POM) cells. AS targeted POM are necessary to form numerous AS structures. In zebrafish there are 5 orthologs of tfap2, tfap2a-e. Tfap2a is required for proper AS development in mammals. Our aim in this study is to determine the function of tfap2 orthologs during zebrafish AS formation. Temporal and spatial expression of tfap2a-e was conducted using wholemount in situ hybridization (WISH) during AS development in 2-5 days post-fertilization embryos. Using cryosectioning we distinguished the spatial expression of tfap2 in the AS. Expression analysis was conducted at time points 2, 3, 4, 5 dpf. The results for 3dpf show that tfap2a, b, e are expressed within the AS. At 2dpf tfap2a, b, e AS expression is reduced. By 4, 5 dpf tfap2a-e AS expression has turned off. Cryosectioning of the 2-5 dpf embryos distinctly separates the expression of each tfap2 gene observed using WISH. With CRISPR established mutant zebrafish lines, tfap2b-e function is being observed at 5, 7 dpf through analysis of AS physiology using Toluidine blue staining (TBS). Overall, we plan to examine the resulting AS physiology, POM cell migratory effects, and NCC/POM gene expression in the absence of tfap2 function.

Patel, Foram

Institution: *TN - Middle Tennessee State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Foram Patel

Abstract Name: Scaling GPA* for complex protein folding pathway simulations

Finding improved protein folding pathway modeling tools is crucial to develop more potent treatments for disorders caused by protein misfolding. The fast-folding streptococcal protein G (1GB1), which has alpha-helices and several beta-sheets, can be used to test models of protein folding. Pathway prediction is often computationally expensive and time-consuming, so current research focuses on accelerating Molecular Dynamics (MD) simulations. One of the common issues in protein folding simulations is the protein getting trapped in local minima of energy surface states until kinetic energy can drive it out. To fix this, past methods have imposed an unnatural bias on the potential and kinetic energies of the simulation environments. Finding unbiased methods for such simulations was an open problem and was addressed by (Syzonenko; Phillips, 2020), introducing a combination of the A* algorithm and MD simulations. This approach encourages progress that would otherwise be stifled due to the stochastic nature of MD simulations and is expected to lower the computing time required to acquire the folded conformation without adding artificial energy bias. The current implementation has storage issues due to system constraints preventing large-scale implementation. This was because therewas an abundant amount offiles produced.It is necessary to figure out methods to make the whole process scalable. A viable alternative could be the replacement of auxiliary file storage on disk with a key-value data structure for storage. This would prove less burdensome on the file systems. Instead of relying on GROMACS commands using OS system calls, the MDAnalysis library, which is based on GROMACS may be used for simulation commands and storing coordinates. Once validated on the complex and fast-folding 1GB1 protein, the approach may be applied to even larger α-β proteins.

Patel, Khushi

Institution: *GA - University of Georgia*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Khushi Patel *Sumil Shah* *Anushka Sarkar*
Walter Schmidt

Abstract Name: Developing Rho1 into a Reporter to Determine Yeast GGTase-I Specificity

Protein prenylation is a post-translational modification (PTM) of “CaaX proteins” which regulates their localization and function. Prenylation occurs to proteins having a C-terminal sequence that consists of a Cysteine (C), two aliphatic amino acids (a), and one of several amino acids (X). CaaX proteins typically undergo a coupled 3-step PTM pathway involving initial lipidation with a C15 or C20 isoprenyl group on the Cysteine, followed by endoproteolytic removal of the ‘aaX’ sequence, and finally methylation of the isoprenyl-cysteine carboxyl group. The 3-step PTM is documented for many CaaX proteins although emerging evidence indicates that some CaaX proteins are only subject to the first isoprenylation step. Ydj1 is an example of a CaaX protein that only undergoes isoprenylation, and it has been adapted as a genetic reporter to assess the prenylation potential of all 8000 possible CXXX sequences. Published results indicate that Ydj1 prenylation mediated by farnesyl transferase (FTase), which adds a C15 farnesyl lipid, extends beyond the traditional CaaX motif.Likewise,preliminary evidence indicates that Ydj1 prenylation mediated by geranylgeranyl transferase-I (GGTase-I), which adds a C20 geranylgeranyl lipid, extends beyond the traditional CaaL/F motif.These results suggest that the prenyltransferases, FTase and GGTase-I, have broader specificity than previously considered. Reliance on the naturally farnesylated Ydj1 reporter limits interpretation of these results for GGTase-I. This study reports on a method for assessing GGTase-I specificity through the naturally geranylgeranylated Rho1 GTPase that is a more appropriate reporter for GGTase-I activity. The method uses the essential nature of Rho1 and genetic recombination to create and assess the function of a plasmid library of Rho1-Cxxx sequences for insight into GGTase-I specificity. This study will refine the breadth of potential targets of the CaaX PTM pathway and provide insight into the implications of using GGTase-I inhibitors as human therapeutics in a variety of disease states.

Patel, Sachi

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sachi Patel,
Ming-Yuan Jian,
Kevin Harrod

Abstract Name: SARS-CoV-2 Infection of the Human Brain

SARS-CoV-2 is a respiratory disease, however, it is known to affect multiple organ systems, including the nervous system. Neurological symptoms have been previously reported to occur with SARS-CoV-2 infection, however the mechanisms through which the virus is associated with these symptoms is unknown. Previous studies have indicated some evidence of neural invasion of SARS-CoV-2 among postmortem COVID-19 patient brains [1]. Here, we examine fifty-five human brain tissue samples from twelve different postmortem COVID-19 patient brains using immunohistochemistry to identify the presence of SARS-CoV-2 spike protein among the tissue samples. The samples included tissue from the hippocampus, midbrain, pons, medulla, and olfactory tracts. Chromogen staining was utilized to stain the tissue. Through microscopic analysis, the presence of SARS-CoV-2 spike protein was identified in over a third of the tissue samples among multiple brain regions. The findings of this study will be furthered to identify the specific cell types infected by SARS-CoV-2 in the human brain.

1. Eric Song, Ce Zhang, Benjamin Israelow, Alice Lu-Culligan, Alba Vieites Prado, Sophie Skriabine, Peiwen Lu, Orr-El Weizman, Feimei Liu, Yile Dai, Klara Szigeti-Buck, Yuki Yasumoto, Guilin Wang, Christopher Castaldi, Jaime Heltke, Evelyn Ng, John Wheeler, Mia Madel Alfajaro, Etienne Levavasseur, Benjamin Fontes, Neal G. Ravindra, David Van Dijk, Shrikant Mane, Murat Gunel, Aaron Ring, Syed A. Jaffar Kazmi, Kai Zhang, Craig B. Wilen, Tamas L. Horvath, Isabelle Plu, Stephane Haik, Jean-Leon Thomas, Angeliki Louvi, Shelli F. Farhadian, Anita Huttner, Danielle Seilhean, Nicolas Renier, Kaya Bilguvar, Akiko Iwasaki; Neuroinvasion of SARS-CoV-2 in human and mouse brain. J Exp Med 1 March 2021; 218 (3): e20202135. doi: https://doi.org/10.1084/jem.20202135

Pater, Damon

Institution: ***IL - Trinity Christian College***

Discipline: Philosophy/Religious Studies

Author/Contributors:
Damon Pater

Abstract Name: The Forest or the Trees: A Holistic Approach to Platonic Ethics

A flawed ethic harms the whole of society, both the individual and the community. Philosopher Melissa Lane, in her recent work Eco-Republic: What the ancients can teach us about ethics, virtue, and sustainable living, demonstrates that as understanding of the whole society emerges, individual people can no longer see themselves as ineffectual and unimportant parts of a system beyond their control; instead, through her work we come to see that no good society can afford individual indifference. This connection between the personal and social in regards to ethics is especially significant when applied to areas where we see our current ethic fall short: environmental justice, and gender theory. Previous efforts at ethical reform have failed to significantly change the status quo because they have not ventured deep enough into nature, our treatment of which is rooted in our ways of treating humanity. While building on Lane's work to shape how we treat the environment, this project will demonstrate this connection between the personal and social by critiquing popular understandings of gender theory. I take up Lane's project of holistic ethics by responding to our common human responsibilities as re-imagined in Lane's work. Just as Socrates in Plato's Republic uses the city to talk about the soul, this project will look at Melissa Lane's analysis of a Platonic environmental ethic to talk about inherited ideas of gender. Throughout this process, we will learn that just as environmental ethics is rooted in 'the Good', so too is gender theory. Because of this interconnectedness, a truly holistic application of virtue ethics requires that we keep the entire landscape in view in every aspect of our lives.

Patterson, Kady

Institution: *NY - Pace University*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Kady Patterson,
Faith Jones

Abstract Name: **Parental status, beliefs about verbal ability, and support for behaviorist ideas on language development**

Parents and non-parents may differ in their support for the behaviorist approach to language acquisition. Behaviorist theory posits that preschool children learn language as a result of caregivers' modeling, shaping, and rewarding of correct verbal behaviors. In a previous study conducted in our lab, parents unlike non-parents, on average, did not endorse the behaviorist approach. It is not clear why this difference emerged, but an earlier study showed similar trends in beliefs about child development whereparents were less likely to attribute children's behavioral tendencies to "nurture" and more likely to associate these with their inherent nature. Further, the behaviorist theory is comparable to a controlling, pedantic style of parenting as opposed to an autonomy-supportive style. This is an important comparison as previous research has demonstrated that individuals who adopted a controlling style of parenting also believed that the verbal ability of their children was highly fixed, that is less malleable. We examined our survey data of 451 participants (226 parents and 225 non-parents) to determine if parental/non-parental status and beliefs about fixedness of verbal ability (via a pre-validated scale) predicted the overall endorsement of behaviorist statements on language development. We also included income and educational status as predictor variables. In addition to parental status, beliefs about fixedness of verbal ability emerged as a significant predictor but not income or education. Parents were less supportive of behaviorist statements than non-parents. The stronger the fixedness beliefs of individuals (regardless of parental status) the stronger the support for behaviorist statements on language development. We discuss these findings from a multidisciplinary perspective.

Pauley, Jordan

Institution: *MT - Montana State University - Bozeman*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Jordan Pauley,
Brooklyn Brekke,
James Larson,
Brian Bothner

Abstract Name: **Novel Mechanism of Methane Synthesis**

Aerobic methane synthesis has now been demonstrated in multiple situations, essentially upending the paradigm that biological methanogenesis is limited to anaerobic methanogens. In one case, the McDermott and Bothner labs at Montana State University isolated a bacterial strain of Acidovorax from Yellowstone Lake that was shown to produce methane in aerobic conditions. Transposon mutagenesis revealed a 5' pyridoxal phosphate-dependent aminotransferase (AAT) was required for growth on methylamine and production of methane. Even more recently, a publication demonstrated that interactions between reactive oxygen species (ROS) and free iron may result in the formation of methane in all living organisms. This methane production has been shown to be increased by cellular oxidative stress. The formation of methane through the involvement of ROS is hypothesized to involve the Fenton reaction. I have demonstrated that methane can be produced through this mechanism in an in vitro system containing Fe(II), a methyl donor, and cellular extract. The mechanism(s) behind methane production in both of these cases remains unclear. Thus far, it is known that both processes are aerobic and require cellular components. However, the substrates employed and the mechanisms responsible for these reactions are unknown. My research is focused on elucidating the substrates and biomolecules responsible for aerobic methane production. It is unknown how methylamine is converted to methane, so I have focused on solving this issue, attempting to determine the first step of methane production by an AAT. Furthermore, I have conducted a metals screen to determine if other metals can employ Fenton-like chemistry to produce methane.

Paulson, Natalie

Institution: ***IA - Wartburg College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Hidaly Hernandez,
Victoria Breitbach,
Maeve Dunne,
Natalie Paulson,
Samantha Larimer Bousquet

Abstract Name: The Effects of Voluntary Exercise on Memory and Anxiety in Young Adult Female C57BL/6 Mice

Exercise increases spatial memory and decreases anxiety. Physiological mechanisms are unknown, but a larger hippocampus can be associated with both of these outcomes. Nonspatial memory is not necessarily associated with the hippocampus, and thus may not similarly be increased by exercise. This study investigated the effect of three weeks of exercise on nonspatial memory and anxiety levels in young adult female C57BL/6 mice using the open field test (anxiety) and object recognition test (nonspatial memory). We hypothesized that mice in the exercise group would exhibit less anxiety-like behavior and would perform better on the nonspatial memory task compared to the sedentary group. Results showed that exercise did not change nonspatial memory and may have increased anxiety, contrary to the hypothesis. These findings may have been due to the tests used, so future studies could investigate other nonspatial memory and anxiety tests.

Pavlock, Kayla

Institution: ***PA - Duquesne University***

Discipline: Nursing/Health Science

Author/Contributors:
Kayla Pavlock *Abigail Weltman* *Megan Whitaker*
Ralph Klotzbaugh

Abstract Name: Undergraduate Nursing Students' Knowledge and Attitudes Toward LGBTQ+ Patients: An Assessment Related to an LGBTQ+ Cultural Competency Module

Background: Nursing research has demonstrated knowledge deficits specific to care of the patient who identifies as lesbian, gay, bisexual, transgender, queer, + (LGBTQ+). Lack of knowledge specific to the care of people in LGBTQ+ communities continues in spite of this populations' increased health disparities. In an effort to address this lack of knowledge, both the Institute of Medicine and the US Department of Health and Human Services have called for prioritization in addressing these disparities. In fact, in their position statement on LGBTQ+ populations, the American Nurses Association (ANA) recognizes that nurses need to deliver care that is culturally congruent for LGBTQ+ populations. The ANA has therefore put forth recommendations that nursing education help to fill the void in the existing knowledge by incorporating content specific to the issues faced by LGBTQ+ populations. Toward that goal, this study sought to include a learning module covering healthcare considerations for the patient who identifies as LGBTQ+ within a required undergraduate nursing cultural competency course.Method:Student (N=124) knowledge related to care of the patient who identifies as LGBTQ+ was assessed before and after participating in a module entitled Cultural Consideration in Clinical Care: Working with LGBTQ+ Patients. Attitudes toward sexual orientation and gender identity were assessed before and after participation using the Modern Homonegativity Scale and Transphobia Scale respectively. A Wilcoxon signed rank test was conducted to evaluate whether students showed improved knowledgeand attitudes. Findings:Student knowledge scores related to care of the LGBTQ+ patient improved significantly after participating in the module. In addition, attitudes toward sexual orientation and gender identity improved significantly. Discussion: Incorporating content specific to issues faced by LGBTQ+ populations within undergraduate nursing education has the potential to improve clinical knowledge necessary for culturally competent care of LGBTQ+ population, as well as to improve attitudes toward these populations.

Pavuluri, Meghana

Institution: *CA - San Jose State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Shivani Kota *Sumanth Basavapatna* *Meghana Pavuluri*
Sohail Zaid

Abstract Name: **Thrust Measurements of a Coaxial Rotor Helicopter along with Flow Visualization Between Rotating Blades**

A robust thrust stand was developed for thrust measurements of a coaxial rotor helicopter. Thrust measurements were used to gauge the effectiveness of the mounted rotor blades. The thrust stand consisted of a load cell and a sensor for rotational speed measurements. A Degraw (HX711-5kg) load cell with strain gauges and a preamplifier was employed. The strain gauge response was recorded by an Arduino based system to get real time thrust measurements. Before using it for the thrust measurements, the system was calibrated with known weights and a calibration curve was established for accurate thrust measurements. A coaxial rotor helicopter (SKY/Rover King) was mounted on the thrust stand where thrust was measured as a function of rotor rpm. In order to optimize the thrust, the design of the commercial helicopter was altered to vary the distance between the opposite rotating rotor blades. Experiments indicate that the thrust peaked around 3000 rpm to about 25 N as the rotor speed was varied from 0 to 4000 rpm. Similarly, the separation between the two rotors was altered and an optimized separation between the blades was found. In order to understand the flow structures between the two opposite rotating rotors, flow visualization was conducted. This was achieved by incorporating a smoke generator along with a helium neon laser sheet that was set at various angles between the rotating blades. A camera was used to capture the motion of the smoke particles within the rotating blades. Images reveal the existence of wake and flow instabilities that are currently under review. Final presentation will describe the thrust stand design along with the thrust measurements at various operating conditions. The discussion on the flow visualization and its impact on the thrust measurements as a function of the separation between the two rotors will be included.

Peacock, Archer

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Courtney Forberg *Archer Peacock* *Rebecca Romero*
Grace Taylor *Zach Yelich* *Stephanie Stockwell*

Abstract Name: **The Future of Plastic Waste: A Multi-Disciplinary Approach**

Approximately 300 million tons of plastic waste is produced every year worldwide; only ~7-9% is recycled.The result is harmful plastic waste accumulation that negatively impacts ecosystems and communities around the world. Polyethylene terephthalate(PET) is one of the most abundant plastics due to its transparency and chemical strength. While naturally occurring PET-degrading bacterial enzymes have been identified (i.e., PETase and MHETase), their physiological requirements make them ill-suited for industrial use. We attempted to address this problem by bioengineering a chimeric PETase::MHETase protein for enhanced PET degradation. Review of recent literature revealed a collection of PETase and MHETase-optimizing mutations shown to enhance temperature and pH tolerance. Building from this work, our approach was to combine these nucleic acid changes into a single modified open reading frame (ORF) to support even greater PET degradation capabilities. The synthetic plasmid DNA construct was transformed intoE. coliand expressed to produce a novel chimeric protein. The biomanufactured product was purified by nickel column chromatography and quality-tested using standard assays. Finally, functional assays allowed us to measure PET plastic degradation. Recognizing that typical practices in life science laboratories are part of the plastic waste problem, our team explored and implemented ways to make our laboratory—and others like it—more sustainable. Additional methodologies from the field of STS (Science, Technology and Society) were used to consider, imagine, and develop greater understanding of the implications of plastic waste and how a bioremediation-based solution might be implemented in the future.

Pearce, Mackenzie

Institution: *MS - Mississippi University for Women*

Discipline: **Political Science**

Author/Contributors:
Mackenzie Pearce

Abstract Name: **The Women of the Magnolia State: Understanding the Status of Contemporary Southern Women's Movement**

Little research has been done to fully understand the Women's Movement in Southern states; however, this research seeks to correct that. The initial questions that spurred this research are as follows: Why do women organize in a state that has, in a sense, already predetermined their political destinies? In other words, why do conservative women organize in a state that is satiated with support? Are they even members of women's organizations at all, or are they instead members of other organizations like the Rotary or the Chamber of Commerce? On the other hand, why do progressive women organize in a state that has a conservative super majority stacked against them? Is it for solidarity, a sense of belonging, or the hope for change, even if it is unlikely to happen in the near future? This research is largely built upon Verta Taylor's 1989 article on abeyance (a period of time in which movement organizations are sustained in periods of low mobilization), where she delineates several abeyance structures and processes. Combining other social movement literature and social network analysis theories, the purpose of this research is to understand the status of the Women's Movement in Mississippi. Using a survey to map the network of both conservative and progressive organizations that identify themselves within the movement will allow the researcher to answer key questions surrounding the status of the movement. The ultimate goal of this research is to provide a mapped network of the organizations of women who self-identify as members of the Women's Movement, as well as report on the status of the Women's Movement in a state previously left out of the national narrative.

Pearce, Moriah

Institution: *TX - Texas Woman's University*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Moriah Pearce

Abstract Name: **A Perceptual Study: The Effect of "Intent" and "Loud" Instructions on Individuals with Parkinson's disease**

The present study is based on a research question, "how do people speak differently with a given instruction." The goal of this study is to examine how people perceive speech produced by individuals with Parkinson's disease (PD) under three different conditions. PD is the second most common neurodegenerative disease. PD is a movement disorder due to the loss of Dopamine-producing cells in the brain. Because speech production is a motoric behavior, many individuals with PD develop hypokinetic dysarthria, a communication disorder. Little is known about how speech by individuals with PD is perceived. It is essential to gain knowledge on the perception of speech/voice of individuals with PD from an untrained person. The present study will focus on how individuals with PD can change their speech/voice under different instructions and the effects of these instructions on the listener's perception of their speech/voice. The goal of this study is to examine how people perceive speech produced by individuals with PD under three different conditions:"natural voice," "speakloud(ly)," and "speak with intent."Forty college students participated in this study as listeners. They rated the recorded speech of individuals with PD in terms of (1) intelligibility, (2) loudness, (3) pitch, and (4) similarity to normal speech. The acoustic analyses of the stimuli revealed that both "Loud" and "Intent" instructions facilitate the communication of people with PD differently. The author expects that both "Loud" and "Intent" instructions facilitate greater intelligibility with increased articulator movements and voice projection. The "Loud" instruction may effectively make one's voice louder with single-target guidance. The "Intent" instruction may facilitate prosody. Either instruction may not approximate speech to the normal level due to the decreased amplitude of breathing efforts with PD.

Pearsall, Ameera

Institution: *WI - Alverno College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ameera Pearsall

Abstract Name: **Associations Between Early Life Stress and Problematic Alcohol Use: The Mediating Effects of Executive Function Components**

The Addictions Neuroclinical Assessment (ANA) is a clinical framework that seeks to understand the etiology and heterogeneity of addiction. It is composed of three neurofunctional domains derived from the neurocircuitry of addiction (incentive salience, executive function, and negative emotionality). Executive function (EF) encompasses processes related to the organization of behavior for the achievement of future goals. Early life stress (ELS) refers to extreme or prolonged stress experienced during early life. High levels of ELS have been shown to negatively impact executive functioning and is associated with problematic alcohol use. The goal of the present study is to understand how changes in EF mediate the relationship between ELS and problematic alcohol use. Individuals (N=300; 40.0% female, 49.7% non-white, 60.9% with current AUD) enrolled in the NIAAA Screening and Natural History Protocol completed the ANA battery. EF was assessed using measures of response inhibition, attention, inference, mental rotation, working memory, interoceptive awareness, metacognition, and impulsivity. Early life stress was measured using the Early Life Stress Questionnaire (ELSQ). Alcohol outcomes include the Alcohol Use Disorder Identification Test (AUDIT) and lifetime AUD diagnosis. Structural equation modeling was used to derive components of EF to determine the associations between ELS factors, EF components, problematic alcohol use, and. We expect to identify subcomponents of EF, and that these subcomponents are associated with problematic alcohol use and ELS. We also expect EF to mediate the relationship between ELS and problematic alcohol use. Findings from these analyses will provide novel insights into the etiology of AUD.

Peaslee, Emerson

Institution: *IA - University of Iowa*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Emerson Peaslee,
Serena Echols,
Grey Caballero,
E. Christian Wells

Abstract Name: **Environmental Justice from the Ground(water) Up: Coping with Contamination in Tallevast, Florida**

This research explores the history of groundwater contamination in Tallevast, Florida and how community residents have responded with coping strategies and environmental justice organizing. Tallevast is an historically segregated African American community in central Florida where residents discovered groundwater contamination from a local manufacturing plant. Since then, studies have documented high rates of cancer and other diseases. Using oral history interviews, we document the social, political, and economic strategies community residents developed in response to the contamination and health outcomes. These strategies focus on environmental justice activism that emphasizes community organizing, local citizen science efforts, and university-community partnerships.

Pechman, Abigail Rae

Institution: *WI - Wisconsin Lutheran College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Joseph Raasch,
Abigail Pechman,
Megan Slaker

Abstract Name: **Memory tests and microglia in a mouse model of Alzheimer's Disease**

Alzheimer's Disease (AD) is characterized by amyloid plaque development and tauopathy, leading to crippling deficits in learning and memory. Most research has focused on how these amyloid plaques and tauopathy impact neurons in the hippocampus and cortical regions. The extent to which this pathology extends to other nervous system cells remains to be fully investigated. Microglia are a potential cell type contributing to AD pathology due to their accumulation around amyloid plaques. To investigate the changes that occur in microglia during AD progression, we compared wild type mice (JAX stock #101045) to 3xTg-AD transgenic mice (MMRRC stock #34830). This mouse line develops plaques and tauopathy beginning around 3-4 months. Mice were tested on an object location task and an object recognition task at early (7 weeks) or late (47 weeks) in development of the pathology. Briefly, mice were tested on behavior over three days, with one day for habituation to the apparatus, and then one day each for the object location and the object recognition tasks. Following behavioral tests, brains were removed and immunohistochemistry was performed to examine microglia (TMEM119 antibody) within the hippocampus and surrounding regions. Micrographs will be analyzed for the number and shape of microglia. Comparisons between wild type and 3xTg-AD mice and between the behavioral time points will be examined using T-tests and ANOVAs. This examination provides additional details on the development of the AD pathology in the 3xTg-AD mice and its contribution to learning and memory processes.

Peebles, Laurie

Institution: *GA - Georgia College and State University*

Discipline: FAN Abstract

Author/Contributors:
Stephanie Jett *Laurie Peebles*

Abstract Name: **Using Community-Based Participatory Action Research Frameworks to Enhance Undergraduate Research and Connect Students to Historically Excluded and Exploited Communities**

Community-based participatory action research models (CbPAR) are unique research frameworks that involve the community of interest (CoI) in the research process. The aim is to address concerns of interest and value to the CoI, which increases investment in the research by the CoI. CbPAR should always be founded in the needs of the CoI, informed by community knowledge, and aimed to lead to community and social changes. Unlike traditional research models, CbPAR focuses on empowering the CoI, amplifying their voices, and sharing their unique stories. These aims are especially important for historically excluded and exploited communities (e.g., the LGBTQIA+ community and Veterans) in research. Within these communities, there is a high degree of distrust and disenfranchisement towards the scientific community due to historical and current exploitation. CbPAR methods are a first step towards mending relationships with these communities. It also connects undergraduate students to these communities in a meaningful way. Students learn to empathetically listen and connect to the stories of the community, becoming more than consumers of knowledge, but rather stewards of that knowledge to promote mutually beneficial change in their communities. Additionally, these qualitative, CbPAR research frameworks provide students with hands-on learning opportunities with interview techniques, transcription, and analyses. CbPAR allows students the unique experience of working directly with the CoI through the phases of the research. Too often, traditional service-learning opportunities in the classroom benefits the insular culture of academia more than the community itself. Through CbPAR, students learn how to connect with the community from a scholar-activist perspective, which emboldens them to to affect social and political change in their communities. We argue that CbPAR methods are mutually beneficial to faculty, students, and the community and should be used more often to allow for research to be less exploitative in our drive to advance science.

Pelera, Jef Andrei

Institution: ***CA - University of the Pacific***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Nyla Maharaj,
Jef Andrei Pelera,
Elizabeth Orwin

Abstract Name: Bioreactor for Corneal Tissue Engineering

Millions worldwide are negatively affected by a shortage in transplants used to treat patients with visual impairment caused by corneal damage[1]. Developments in tissue engineering of human corneas can increase the supply of corneal transplants to resolve the donor shortage. A bioreactor and a pressure control system to impart mechanical strain to growing tissue was developed and optimized to mimic the in-vivo corneal environment. Understanding how mechanical signals affect the protein expression of growing corneal cells can lead to more effective methods of engineering accurate corneal transplants. Previous studies have shown that corneal fibroblasts grown under physiological levels of mechanical strain differentiated into quiescent keratocytes, which have lower α-SMA protein levels compared to myofibroblasts, and are more representative of normal corneal tissue [2]. Corneal fibroblasts were isolated from the stromal layer of harvested New Zealand white rabbit eyes, and successfully seeded in our bioreactor system. Our bioreactor system allows us to study the effects of different levels of mechanical strain as well as electromagnetic stimuli on α-SMA protein levels in growing corneal tissue. These studies will help to produce more efficient methods of engineering new corneal tissue for transplants.

Pelfree, Iyan

Institution: ***WI - Carthage College***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Andrew Biertzer *Zachary Hale* *Andrew Pustina*

Abstract Name: Competition Demands of NCAA Division III Women?s Collegiate Lacrosse

In an effort to assess the demands of NCAA DIVISION III woman's collegiate lacrosse, Global Positioning Systems (GPS) were used to quantify positional demands during the 2022 College Conference of Illinois and Wisconsin season (NCAA Division III) for the Carthage College Women's Lacrosse team. GPS data was collected from twelve female athletes using a sampling rate of 10 Hz (Titan 2, Integrated Bionics Inc. Austin, Texas). When comparing total distance by position, a statistically significant difference was found between the midfielders and attackers (0.01; ES = 1.75, large) and between the midfielders and defenders (0.01; ES = 1.95, large). No differences were observed between attackers and defenders (p = 0.15; d = 0.34, small). The main finding was that midfielders covered significantly more total distance than both attackers and defenders. Calder et al. (2021) observed similar distances among female defenders (7517 ± 786 m), midfielders (6972 ± 770 m), and attackers (6806 ± 586 m) at the NCAA Division I level. Calder's findings were that defenders covered the most distance during competition; conversely, the midfielders covered the most distance in this study. These differences are likely due to the teams' style of play and talent level. Furthermore, all positions experienced a decline in total distance covered as the game progressed, consistent with other studies (Calder et al., 2021; Varley et al., 2014). These effects are likely due to fatigue, and by developing positional profiles of volumes throughout match-play, coaches can ensure their athletes are prepared for competition demands. It is suggested that coaches and practitioners ensure lacrosse players can handle distances of 6130-8110 m during match play; it is best achieved if players are trained by positional needs. This specific training may help reduce the progressive loss in total distance covered with each quarter played.

Pelletier, Julianne

Institution: ***CO - Regis University***

Discipline: Biology

Author/Contributors:
Julianne Pelletier *April Fineberg* *Haley Simpson*
Brier Raquet *Ashley Fricks-Gleason*

Abstract Name: Determining the Dose of Exercise Necessary to Attenuate Methamphetamine Neurotoxicity

Methamphetamine (METH) use continues to be a major public health concern. Upwards of 14.7 million people in the U.S report having tried METH. The use of METH is troublesome, not only due to the acute effects of the drug which can include psychosis and aggressive behavior, but also due to the long-term consequences including neurotoxicity, cognitive deficits, and addiction. In fact, individuals who use and abuse METH are more likely to develop Parkinson's disease, suggesting a possibly progressive dopamine loss due to METH use. Exercise is well known for its beneficial physiological effects and cognition-enhancing properties and has long been investigated in the context of Parkinson's disease and other neurodegenerative diseases. Only recently has exercise been studied as a potential therapeutic treatment of substance use disorder. Previously, we have shown that 3 weeks of voluntary running after a METH binge regemine protects against METH-induced dopaminergic neurotoxicity. The aim of this project is to discover whether or not the amount of exercise done has an effect on neurotoxicity attenuation. Male Sprague Dawley rats were dosed with a neurotoxic regimen of (+)-METH-HCl (4 x 4 mg/kg, s.c. at 2-hr intervals) or saline (4 x 1 ml/kg, s.c. at 2-hr intervals). Beginning 1, 7, or 30 days after injections, animals were then subdivided into one of two exercise conditions, voluntary exercise or sedentary control. Afterwards, animals were split into low or high exercise groups by average amount ran in order to compare amounts of neurotoxicity attenuation in animals that exercised at different rates. Results will be analyzed to understand whether a threshold of exercise needs to be met in order to attenuate neurotoxicity after METH use.

Pelto, Brendan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Brendan Pelto

Abstract Name: Continuous Mobile Authentication with Multi Finger Touch Dynamics

Mobile Devices are growing in use day by day causing a need for better mobile security. Mobile devices have some security features built into them already, but if the intruder has already unlocked the device those features will not work. Identifying where this security can be improved is a difficult task, however improvements in Touch Dynamics Authentication show that it could be used as a form of continuous authentication once the device has been unlocked. Oftentimes users on a device will have very repetitive movements that humans can not detect, but a program can be trained to understand these patterns. In this research we will be looking into specifically Multi-Finger Touch Dynamics and attempting to work out three models that are able to detect an authentic user from an imposter. We will be extracting several features in order to train these programs and some include velocity, acceleration, and how many pixels each finger covers

Pena Barrientos, Marco

Institution: ***FL - Miami Dade College***

Discipline: **Mathematics**

Author/Contributors:
Marco Pena Barrientos

Abstract Name: **A Mathematical Model for Analysis of Traffic Flow in State Road 826 using Incremental Trajectory Clustering and Reinforced Neural Network**

Proper modeling of highway environments is essential when attempting to address traffic flow in it. Redesigning infrastructure, planification and the subsequent execution often seem like the appropriate solution, yet its effectiveness is identifiable in the long term. Having the State Road 826 located in Miami-Dade County, considered as the second most dangerous highway in Miami, as the scenario, this research aims at identifying (1) the most common situations in which the traffic is very slow or stationary; and (2) small areas where traffic congestions habitually occur. The use of data analysis and machine learning to evaluate the traffic flow within a delimited area can provide insight into the traffic conditions, especially by performing abnormality detection and classification. If conditions of traffic in highways are studied in a nonparametric way, short-term solutions as application of new transit rules seem to be suitably achievable. We proposed an unsupervised and nonparametric method to analyze rush-hours traffic conditions in $\Theta(d)$ time, where d represents the number of trajectory clusters. In the intended method, temporal association of the vehicles and the infrastructure of the studied highway is taken into consideration using Temporally Incremental Gravity Model-Dynamic Trajectory Model (TIGM-DTM). Further, the distance-based scene learning is realistically intuitive in predicting the parameters of the model. The collection of these parameters plays a crucial role in the interpretation of the data and enables us to create statistical simulations and outputs using a reinforced neural network. For this study, we use data provided by the Leading Transportation Analytics Solutions, INRIX.

Pendala, Anjali

Institution: ***VA - George Mason University***

Discipline: **Nursing/Health Science**

Author/Contributors:
Anjali Pendala,
Maryann Greenfield,
Rebecca Weinert,
Margaret Slavin

Abstract Name: **Dietary Intake Patterns in Adults with Migraine**

According to the World Health Organization, migraine disease is one of the top 10 most disabling medical conditions. Previously, migraine research focused primarily on pharmacological interventions that could “treat” or “prevent” a migraine. Migraine research now also focuses on the prevention of migraines through diet or supplements, such as magnesium, and other behavioral interventions. However, there has been a lack of high – quality data used to determine dietary patterns of individuals with migraine. Most often in prior studies of migraine, dietary data was collected through nutrition surveys at a single point in time. Although nutritional surveys are easily accessible for participants, they provide limited results regarding the participants’ dietary intake. This study is using the Nutrition Data System for Researchers (NDSR) software, following the Multiple Pass dietary interview method, to get a broader and more accurate assessment of usual dietary intake of people with migraines. We aim to collect dietary data across 8 dietary interviews in 20 people with migraine to demonstrate the feasibility of using this method in this population. The NDSR software will provide data on the nutrient and food intake, which will be analyzed to observe dietary patterns that emerge among the migraine population. These results will advance the methodology dietary intake data collection in the migraine population.

Pennington, Hannah

Institution: *KS - University of Kansas*

Discipline: **Sociology**

Author/Contributors:
Hannah Pennington

Abstract Name: **Foreign Funding of Al-Qaeda in the Arabian Peninsula: Soft Power Implementation in Yemen**

Since the outbreak of the Yemeni Civil War in 2014, foreign nations continually invest in social welfare programs with the goal of aiding Yemenis; however, involvement in Al-Qaeda in the Arabian Peninsula (AQAP) increases. Analyzing the relationship between the two illustrates the effectivity of soft power implementation in addressing socioeconomic issues within each governorate. Scholars ponder how the role of social welfare programs affects extremism participation in the Middle East. Further, scholars call for more social welfare programs in the Middle East and for more research about the relationship between social welfare programs and extremism. The project will utilize data from the World Bank about foreign-invested social welfare programs in Yemen to illustrate efficiency and potential impacts. In addition, this project will utilize government records on known AQAP extremists to analyze recruitment factors and socioeconomic conditions. The mixture of descriptive and explanatory analysis may reveal the influence of foreign-invested social welfare programs on increasing AQAP extremist involvement since 2014. Considering the implications of this project and the potential to aid future counter-extremism measures by utilizing socio-cultural understanding will help keep governments from repeating costly and relation-straining mistakes.

Pepka, Abbi

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
Abbigail Pepka *Dylan Adams* *Jessica Dao*
Carly Gifferson *Alicia Olsen* *Jennifer Schwart*
Carly Swenson *Ava Quick* *Nicholas Beltz*
Saori Braun

Abstract Name: **Impact of Caffeine Combined with Resistance Training on Post-Exercise Arterial Stiffness in Habitual Caffeine Consumers**

Background/Purpose: Increased arterial stiffness has been shown as a marker of cardiovascular-related events. Previous research has revealed resistance training and caffeine consumption leads to increases in arterial stiffness independently. Therefore, the purpose of this study was to determine the residual effect of combining resistance training and caffeine on arterial stiffness in resistance trained females. Methods: This experimental study was conducted on 18participants between the age of 18and 23yrs who were resistance trained in accordance to ACSM resistance training guidelines. All participants were habitual caffeine drinkers as defined by consumption of at least 200 mg/day, 5 days/wk. Pre-trial evaluation of 10-rep max was performed to determine individual training load for each exercise session. Subjects completed both caffeine and placebo conditions in a counterbalance fashion to avoid an order effect. Caffeine was administered during each trial a dose equal to 3 mg/kg body weight. Each condition was followed by an exercise intervention consisting of a full-body superset resistance training protocol. Measurements of arterial stiffness (pulse wave velocity, pulse wave analysis, and pulse pressure) were obtained using the SphygmoCor® system at 4 different time points (baseline, post-exercis, 10min post-, 20min post-, and 40min post-exercise). Results: A two-way repeated measure analysis of variance (within-subjects) did not indicate a significant difference in measurements of arterial stiffness between placebo and caffeine trials, but a time effect was revealed to be significant within both trials ($p = 0.008$). Conclusion: The results did not indicate a summative increase in measurements of arterial stiffness due to the combination of resistance training and caffeine consumption.

Perdue, Landon

Institution: *AR - Arkansas State University*

Discipline: Biology

Author/Contributors:
Landon Perdue

Abstract Name: **Impact of Biodegrading Plastic in Microgravity on Long Term Space Sustainability**

The use of low density plastics is a prevalent part of our everyday life, and space travel. From bottling devices to radiation shielding there are many convenient uses for these polymers. This proves detrimental to our environment, however, as it takes hundreds of years for these plastics to degrade naturally, leading tooverpopulation of landfills and stray debris in our oceans. As we travel further into the expanse of our solar system, inevitably, the use of these plastics will follow, as well as the accumulation of waste. Galleria mellonella, or the “waxworm”, is capable of biodegrading low density polyethylene (LDPE, plastic) into ethylene glycol, the major component of antifreeze. In an effort to test this novel plastic management strategy for space, our team was chosen to send an experimental payload to the International Space Station and address two key questions: if waxworms could survive space travel and if they were capable of biodegrading plastic under microgravity conditions. Preliminary results included time- lapse imaging that confirmed waxworm survival on the ISS for the 30-day testing period. In addition, waxworm larvae consumed similar amounts of plastic to earth gravity controls. This study provides unique insight into how this organism may provide a means of repurposing the large volumes of plastic used in space travel for a more sustainable future in our solar system.

Perez, Carlos

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: History

Author/Contributors:
Carlos Perez Martinez

Abstract Name: **Charles Coughlin, Antisemitism, Right Wing Populism, and influecne of Radio Propaganda**

The study of right-wing populism has seen a resurgence since the aftermath of the 2016 election. More attention has been paid to right-wing populists of the past to understand the present political climate. Father Charles E. Coughlin was a major right-wing populist who emerged from the social upheaval caused by the great depression. What is unique about Charles Coughlin is that he utilized the medium of radio more effectively than his contemporaries. Originally, he used the radio to broadcast his sermons, but quickly inserted his own politics into his broadcasts. His fiery rhetoric and natural charisma naturally led to a massive audience. At his peak, he garnered nearly thirty million listeners. Originally, Coughlin was a fervent supporter of Franklin Delano Roosevelt’s New Deal but withdrew his support after his attempts to get FDR to implement his own policy proposals failed. Coughlin mounted a third-party campaign in 1936 with the remnants of the ‘Share Our Wealth” Movement and the Townsend movement, but it failed because there was little, if any, organizing on the ground. Following this defeat, Coughlin saw no more inroads into electoral politics and began to focus his efforts on his radio show as a means to influence politics. More than anyone else in America, Coughlin showed how powerful the new medium of radio could be in spreading hateful propaganda and rhetoric. For Coughlin, this manifested in his antisemitic and fascist tendencies. At the same time, Coughlin’s popularity did not translate into a real movement like Huey Long’s. While Coughlin was a popular figure who had a massive influence on public opinion, this only created the illusion of a mass movement. The radio was his greatest asset, but also his greatest liability, as the nature of the medium fostered the illusion of movement.

Perez, Catherine

Institution: *CA - California State University - Channel Islands*

Discipline: Psychology/Neuroscience

Author/Contributors:
Catherine Perez,
Samantha Rosinsky,
Melissa Soenke

Abstract Name: **The role of COVID-19 in anti-Asian prejudice**

Terror management theory (TMT; Greenberg, Pyszczynski,; Solomon, 1986) states that reminders of death create the potential for anxiety, but a way to keep this anxiety managed is through cultural worldviews, self-esteem, and relationships. Cultural worldviews, like religion or political beliefs, involve having shared beliefs about reality that can provide a basis for self-esteem and a sense of immortality. TMT research demonstrates that reminders of death increase support for one's own worldview and hostility toward those with differing worldviews. For example, Germans reminded of death strongly preferred German products over foreign ones (Jonas et al., 2005). Reminders of death increase ingroup preference which increases one's sense of personal and group value. Recently the COVID-19 virus has caused both an increase in death reminders and prejudice, specifically anti-Asian prejudice due to stereotyped connections made between the virus and its origin in China. Comments tweeted by former President Trump calling COVID-19 the 'Chinese Virus' provide fuel for this prejudice. The present study investigates whether statements regarding the Chinese origination of COVID-19 heighten anti-Asian prejudice following reminders of death. To do this, half of the participants are reminded of their own death, while the other half are reminded of a control topic. Participants also read about the Chinese origin of COVID-19 or an article about COVID-19 that doesn't mention the origin of the virus. For the dependent variable, participants complete a measure of anti-Asian prejudice. The hypothesis for this study is that reminders of death will heighten anti-Asian prejudice for those participants who read the article mentioning the Chinese origin of COVID-19 compared to those not reminded of death or the Chinese origin of COVID-19. The results of this study will help us to better understand the causes and consequences of prejudice.

Perez, D'Angelo

Institution: *MN - Hamline University*

Discipline: Chemistry/Materials Science

Author/Contributors:
D'Angelo Perez,
Maddie Nickell,
Urvashi Gangal,
John Matachek,
Betsy Martinez-Vaz

Abstract Name: **Free Radical Polymerization by a Direct Current Pin to Water Discharge Plasma**

This study is being done out of inspiration from previous studies that have used a myriad of free radical generating sources such as a radio frequency (RF) driven plasma or catalyst systems to produce industry useful polymers. This study will utilize a direct current (DC) pin to water glow discharge cold atmospheric pressure plasma (CAP) in its ability to generate silver polyacrylamide composites and copolymers of acrylamide and acrylic acid. These resulting polymers find applications in many fields such as waste water treatment and other vocations dealing with the production of artificial muscles, switches, memory devices, and etc. A set of spectrophotometry, such as proton nuclear magnetic resonance (HNMR) and fourier-transform infrared spectroscopy (FTIR), were conducted to confirm polymerization, copolymerization, and linkages between metallic cations; the results of such analysis is that polymer occurred to form the desired metal composites and polymers. Analysis of differing treatment times provided insight into the optimization of this system and inhibition zone tests confirmed the antimicrobial properties of silver polymer composites produced in this system. In conclusion, this system has shown to be capable in the production of metal polymer composites and polymers. It is recommended that further optimization to the system be performed to achieve higher yields.

Perez, Jarrod

Institution: ***TX - The University of Texas Rio Grande Valley***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jarrod Perez *Nicholas Perez* *Ricardo Sepulveda*
Roberto Torres *Javier Ortega*

Abstract Name: Development of a Pin-on-Disk Tribometer to Evaluate Advanced Materials and Lubricants at Elevated Temperatures

A tribometer is an instrument that measures tribological quantities, such as coefficient of friction, friction force, and wear volume, between two surfaces in contact. The first wear testers relied on Archard's law, where the wear rate only depends on load and sliding distance. A tribotester is the general name given to a machine or device used to perform tests and simulations of wear, friction, and lubrication which are the subject of the study of tribology. The current research project realizes three objectives: (1) to design and develop a new wear testing device capable of reproducing unidirectional reciprocating motion at high frequencies (5 to 10 Hz) and high temperature, (2) to validate the functionality of the new wear testing device by evaluating the influence of the unidirectional reciprocating motion at high frequencies and high temperature on the wear rate of advanced metal matrix composite (MMC) coatings and biomaterials intended for human joint replacements, and (3) gather experience in the design and manufacturing of different complex mechanisms. The proposed pin-on-disk wear testing device is modeled on the original design concepts of a basic pin-on-disk wear testing platform. The design incorporates an upper-bearing material (ball or pin) attached to a pin holder and a lower-bearing material or disk attached to a disk holder. The primary advantage of this classic arrangement is that any combination of candidate-bearing materials can be evaluated on this testing setup. In order to operate, the proposed device includes different components such as specimen holders for pin and disk, a motion system, a load system, and a heating chamber.The proposed instrument could be implemented as a universal testing device to perform tribological tests following the specifications included in different standards, such as ASTM G133 and ASTM F732.

Perez Galarza, Elvis

Institution: ***NC - Western Carolina University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Elvis Perez Galarza,
Caleigh Gress-Byrd,
Channa De Silva

Abstract Name: Evaluating the antioxidant properties of berberine metabolites using computational chemistry methods.

Free radicals are molecules that contain one or more unpaired electrons and can cause damage on the microscopic level in the human body. They can cause damage to DNA, cancer, and inflammations. These harmful free radicals can be naturally metabolized using the body's defense mechanisms to minimize their harmful effects. However, in today's world there are many external factors that can lead to an excess production of free radicals in the body. One way to combat this is to consume food containing natural antioxidants. Our research is focused on evaluating the antioxidant properties of the metabolites of berberine. Berberine is an herbal supplement that can be extracted from the plant, Berberis vulgaris, the common barberry. It has historically been used for treating gastrointestinal infections and can act as an anti-inflammatory compound in patients with diabetes. When berberine is ingested, it is metabolized into six different forms called metabolites. Density functional theory (DFT) level of calculations were used to evaluate the antioxidant properties of the six metabolites using Gaussian 09 software. The DFT geometry optimization and thermodynamic property calculations of the berberine metabolites were carried out using the B3LYP method and 6-311G (d,p) basis set in both gas and solvent phases. Gas phase bond dissociation energies reveal that the hydrogen energy transfer mechanism is dominant in two metabolites that contain one hydroxyl and one methoxy group in their structures. The single electron transfer, followed by proton transfer (SET-PT) and the sequential proton loss electron transfer (SPLET) mechanisms will be investigated, and the antioxidant properties will be compared among standard antioxidant molecules including vitamin C, quercetin, and gallic acid.

Perreault, Miles

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Miles Perreault

Abstract Name: **Finding the Right Words: Community Building Through Language**

When coming to college as a freshman, many people are leaving their homes and communities for the first time. For queer students, this can involve exploring aspects of their identity freely for in ways they might not have been able to before. But where do students find the space to do that? On this midsized public university in the Midwest, students carved out a space for themselves to co-create a queer community in a student led queer organization.This study examines how marginalized students form connections and social bonds through language and shared culture in this on-campus queer organization. All of these students identify as queer in someway and came to the organization for varying reasons, but many of them center around finding a place of community, and togetherness. This study draws on ethnographic tools such as observations, audio and visual recordings, and interviews to collect narratives and interactions the students have with each other.I am analyzing and explaining these interactions with queer theory by looking at everything as a text, including a meeting room and the meeting itself. Queer theory as a field of critical theory analyzes texts outside the heteronormative interpretation. I use queer theory to explain the students creating their own queer power dynamics while also using existing power dynamics to negotiate in-group and out-group in their hierarchy/democracy.These power dynamics and inclusion can be used to understand the power relationship in a peer-peer setting, and further research done on queer social relationship creation and maintenance.

Persi, Ethan

Institution: *CA - Loyola Marymount University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Ethan Persi,
Justin Hynes

Abstract Name: **Implementation of Raman Spectroscopy on Lithium-Ion Pouch Cells**

With electric vehicles becoming more mainstream and power companies moving to renewable energy, the need for efficient energy storage has exponentially grown over recent years. Lithium-ion batteries are currently the most efficient form of energy storage, and new battery technology must be developed to meet today's increased demand. One of the major challenges preventing battery development is a lack of research into how cells chemically evolve over time and under various conditions. In collaboration with battery research and development company, Electric Goddess, the proposed project seeks to learn about the internals of different cells through the implementation of Raman spectroscopy technique. This data will be valuable for battery research companies as well as corporations looking to the future of more sustainable and safe Li-ion batteries. The proposed outcome of this project is to gain a better understanding of the damage, state of charge, and chemical makeup of each cell.

Peruch, Rigo

Institution: *OK - University of Central Oklahoma*

Discipline: Art/Music History

Author/Contributors:
Rigo Peruch

Abstract Name: **Graphic Novelization: An Underused Form of Visual Communication**

Graphic Novels tend to be one of the most underused and underutilized forms of visual communication. This essay seeks to understand and take a look at graphic novels to show how Graphic novels have the ability to convey cultural and historical phenomena in graphic design both domestically and internationally through their storytelling characteristics. Graphic novels began in versions of visual communication known as cave paintings, petroglyphs, hieroglyphs, and more.These things were the first forms of storytelling as well and thus set the stage for graphic novels. Storytelling has always beena significant component of graphic novels as well as past forms of visual communication. This essay also reflects on the idea of incorporating storytelling in order to tell of the past.From there we can seek to understand how the impact of the first graphics contributed to the start of graphic publications, such as comic books, comic strips, graphic novels, etc. Graphic novels differ from their illustrative counterparts, but recognizing the differences is important as graphic novels can incorporate more detailed and more sources to convey the message of the creator. This essay is meant to educate and explore the research on the history of graphic novels and how they are relevant to the history of graphic design.

Pesnell, Braydon

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Jennifer Nava,
McKenna Hogan,
Braydon Pesnell

Abstract Name: **Discrepancies Between Cleaning Procedures in Medical Settings Regarding Clostridioides difficile Prevention**

Clostridioides difficile (C.diff), a common healthcare-associated infection (HAI), is a gram positive bacteria that causes life-threatening diarrhea (12,800 deaths in the US in 2017) especially in immunocompromised individuals. Patients who receive extensive broad-spectrum antibiotic treatment develop this infection and it is highly contagious in clinical environments. Despite it being primarily spread through exposure in medical settings, there are no standardized procedures between facilites on sanitizing surfaces after coming into contact with a patient who is positive for C.diff. The goal of this research is to compare cleaning procedures and determine which is most effective at killing C.diff on surfaces as it survives common disinfection due to sporulation. Surveys will be sent to various medical facilities nationwide inquiring about patient history, cleaning techniques, and follow up testing to see if the C.diff spores were eradicated. Following their responses, each procedure will be evaluated on its efficacy to eliminate spores based on CDC guidelines. After the research is performed, it will be evident by the variation of C.diff isolates between regimens that some policies are superior to others and there should be standardization between healthcare facilitesto better prevent the spread of severe HAIs.

Petersen, Catherine

Institution: *UT - University of Utah*

Discipline: Public Health

Author/Contributors:
Catherine Petersen *Sejal Mistry* *Ramkiran Gouripeddi*
Julio Facelli

Abstract Name: **Examining the Relationship between Air Quality Trends and Glycemic Outcomes Among Patients With Type 2 Diabetes Mellitus.**

Type 2 diabetes mellitus (T2DM) is a chronic condition caused by insulin resistance and metabolic dysfunction. T2DM is associated with many diabetes related complications, including heart disease, vision loss, and kidney disease. Long term exposure to ultrafine components of particulate matter with an aerodynamic diameter ≤ 2.5 μm (PM2.5) can cross the pulmonary alveolar membrane and direct inflammatory effects on target organs, leading to oxidative stress and increased insulin resistance. While several studies have identified a relationship between PM2.5 concentrations and onset of T2DM, few studies have examined the role of air pollution on glycemic outcomes after T2DM diagnosis. Continued exposure to PM2.5 may worsen glycemic control and metabolic dysfunction, contributing to poor glycemic outcomes and increased morbidity/mortality in individuals with T2DM. Therefore, the objective of this research was to evaluate the relationship between temporal trends in PM2.5 concentrations and glycemic outcomes among patients with T2DM in Davis, Utah, and Salt Lake Counties in Utah. Electronic medical record data for 143,434 individuals with an eligible ICD-10 diagnosis code for T2DM from 2010-2022 were selected for analysis. PM2.5 concentrations were extracted from the Environmental Protection Agency's (EPA) Air Quality System in Davis, Utah, and Salt Lake counties in Utah. The date of a patient's initial diagnosis was found and used to create exposure profiles for one year following diagnosis. Preliminary analysis was performed using a kShape time-series clustering with 12 clusters. This created a visual representation of individual exposure for one year following diagnosis, making patterns in air pollution exposure more apparent. Analysis is ongoing and it is hopeful that the results of this study will elucidate the role of PM2.5 concentrations on glycemic outcomes in patients with T2DM and may inform public health interventions to minimize air pollution and encourage better outcomes for individuals with T2DM.

Petersen, Kate

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Biology

Author/Contributors:
Kate Petersen

Abstract Name: **Optimization of casein micelle nanoparticle formation using high-pressure homogenization**

Casein proteins are the most abundant proteins in milk. They orient themselves into micellar structures to create hydrophobic (water repelling) cores. When this protein structure is disrupted and then reaggregated the proteins can form nanoparticles. Different substances can be encapsulated inside these nanoparticles, which improves their stability and bioavailability. One technique known to induce nanoparticles to form is high pressure homogenization (HPH). In this research we used HPH with ethanol (EtOH) as a solvent at different concentrations and temperatures to find the optimal nanoparticle formation. We used absorbance to measure casein micelle dissociation. The control sample, with no HPH, at 65ºC had an average absorbance of 0.156±0.01 with 0% ethanol and 0.052±0.03 with 60% ethanol. This reflects the dissociation of casein micelles with a high ethanol concentration at elevated temperatures. At a HPH of 300 MPa and a temperature of 65ºC, the average absorbance with 0% ethanol was 0.126±0.019 and with 60% ethanol was 0.036±0.032. At 5ºC with or without HPH, the ethanol did not dissociate the casein proteins and showed possible aggregation, the opposite of what we were trying to achieve. The results of our experiments tell us that we achieved dissociation with HPH and ethanol, especially at higher temperatures and a higher ethanol concentration.

Petersen, Taelyn

Institution: *UT - Weber State University*

Discipline: Public Health

Author/Contributors:
Taelyn Petersen,
Jakob Lenthe

Abstract Name: **Topical Bacteriophage Treatment Against Common Epidermal Infections**

Bacteriophages have shown promise in killing resistant organisms and in controlling infections to antibiotic resistant organisms. Both S. aureus, specifically MRSA, and S. pyogenes are common in epidermal infections and their respective bacteriophages have proven effective in resolving epidermal infections. While broad spectrum bacteriophages targeting these bacteria have been assessed in topical administration, little research has been published on bivalent phage therapies. The aim of this study is to assess the efficacy of a mixture of S. aureus and S. pyogenes bacteriophages in treating common skin infections that may be resistant to topical antibiotic creams. Laboratory strains of S. aureus and S. pyogenes will be used in an in vitro model of skin infection, using epithelial cell monolayers, and will be treated with a combination of their phages. Effective phage dosing against combinations and concentrations of organisms will be determined through calibration curves. Calculations from these calibration curves will provide information about the optimal doses of the bivalent phage treatment and used to assess the ability of the phages to clear infection in the in-vitro skin model. The epithelial monolayers will have different groups assigned to them, namely: controls for both bacteria and bacteriophages, individual bacteriophages in a mixture of MRSA and S. pyogenes, and finally a mixture of both genera of bacteria and both groups of bacteriophages. Following treatment, supernatant and cell layers will be tested using a standard IL-36 ELISA and confocal microscopy to assess overall pathology and success of the phage treatment compared to that of the control epithelial monolayers. If successful, the bivalent phage therapy will show reduction of bacterial growth and tissue damage. This would provide insight into how bivalent phage therapies treat wound infections and how it may reduce future reliance on antibiotics.

Petersilka, Quinn

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Quinn Petersilka *Lesley Mayne*

Abstract Name: **Undergraduate Pedagogy in Augmentative and Assistive Communication: The Influence of Hands-On Experience**

Research question: This research investigated instructional practices in undergraduate courses to determine how hands-on experience influences undergraduate students' knowledge and skill in an augmentative and assistive communication (AAC) course.Contextualize: According to the American Speech-Language-Hearing Association (ASHA) 2020 Schools Survey of SLP Caseloads and Statistics, the percentage of SLPs who regularly serve nonverbal, AAC cases was 63.1%. There is a gap in the research that investigates teaching practices at the university level training students that contribute to knowledge and skills in AAC. Rosenshine (2015) says that experiential, hands-on activities should be offered after basic material is learned. Therefore, the aim of this study is to investigate the impact of high-quality instruction that embeds hands-on experiences with AAC tools and devices on the knowledge and skills of undergraduate students compared to a non-hands-on experience in an AAC course.Methods: Data was collected through a pre-survey, a post-survey, and at three checkpoints throughout the semester. All students received high-quality direct instruction for approximately one hour of the class. For approximately 50 minutes after instruction, half of the students in the class workedin a hands-on condition and half ina hands-off condition each in a separate classroom. Students who consented to participate in the study submitted their coursework anonymously with no presence by a co-primary investigator. Qualtrics surveys were completed after project work across the four data collection points. Conclusions: The researchers will present qualitative and quantitative data regarding the impact a hands-on experience has on undergraduate students' knowledge, skill, and perception of AAC tools and devices. It is anticipated that the results of this survey will connect teaching practices at the university level withthe knowledge and skills undergraduate students gain in an AAC course.The implications of this study may inform the benefit of hands-on experiences in undergraduate coursework.

Peterson, Alexis

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Alexis Peterson,
Jatin Pandey,
Dhivyashree Senthil Murugan

Abstract Name: **Biological Investigation of Phenylboronic Acid Nitrogen Mustards induced apoptosis (Cell Death in Triple Negative Breast Cancer)**

Triple Negative Breast Cancer (TNBC) tests negative for the presence of hormonal receptors such as progesterone and estrogen receptors and excess human epidermal growth factor (HER2 protein). TNBC is unaffected by hormonal treatments that target these three growth factors. After diagnosis, there is less time than other cancers to treat TNBC. These characteristics of TNBC result in having poorer prognosis among all types of breast cancer. Therefore, there is dire need for a better understanding of the cancer and of potential drugs. Based on previous research, we have concluded that two Phenylboronic acid nitrogen mustard prodrugs, CWB-20I45 and FAN-NM-CH3 are effective in reducing tumor sizes due to prodrugs' enhanced activity in the presence of hydrogen peroxide (H2O2). Prodrugs are initially inactive that are then turned into active compounds upon metabolism. Inside cells, these prodrugs cause DNA cross-linking that ceases DNA replication and leads to cell death, making them superior to common chemotherapy drugs. Cancer cells have higher levels of reactive oxygen species (ROS) such as H2O2. The prodrugs are thus more selective to cancer cells and less toxic to normal cells. A series of in-vivo experiments determined that the prodrugs are safe in mice. To understand the drug's mechanism inside cells, we are investigating biological pathways by looking at protein expression levels, which vary in drug-treated cells. These proteins include tumor suppressor p53. This was done using RT-qPCR technique to amplify RNA upon extracting mRNA between cancerous cells that are untreated versus drug-treated.

Peterson, Annika

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Annika Peterson,
Bryan Brown

Abstract Name: **Representation Matters: Communication Disorders in Children's Literature**

We are conducting qualitative research looking at the representation of communication disorders in children's story books. To begin the process of data collection, we searched for books using a variety of sources including: the Children's Core Collection Database using a list of communication disorders as search terms and limiting the search results by publication date, from 1998 to 2022.Upon evaluation of the database results books known to us were missing. We added to the database result books from booklists made by speech-language pathologists (SLP) found by internet searches, and individual articles listing children's books for children with communication disorders from the ASHA Leader and HuffPost. We gathered all the books together and eliminated any books that were not related to Communication Disorders or that were more than fifty pages long, leaving 175 books that can serve as useful resources for children with communication disorders and those who care for them. Of the 175 books 77 were about hearing disorders, 33 were about autism, 21 regarded language and cognition disorders, the remaining come from other speech and language disorders including, but not limited to, articulation and phonological disorders, stuttering, cleft palate, cerebral palsy and Down Syndrome. Our analysis is ongoing, during which we will examine the books and will describe the authors' features (e.g., person with communication disorder, parent, clinician); character representation (e.g., species, race, gender, disability etc); and major themes of the books (e.g., familiarization to therapy, building self-efficacy etc).

Peterson, Carter

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Carter Peterson,
Heather Kost

Abstract Name: **The effect of adolescent isotretinoin exposure on the hippocampus, stress coping behavior, and recognition memory**

13-cis-retinoic acid (Isotretinoin) is a commonly prescribed medication for the treatment of persistent cystic acne but has also been shown to cause depressive behaviors and suicidal thoughts in patients. The hippocampus is a brain area involved in regulation of the stress response as well as cognitive functions such as novel memory formation, and alterations to this area may be important to the development of symptoms following adolescent isotretinoin exposure. In the present study, we assessed the effects of adolescent isotretinoin exposure on stress-coping behavior and novel object recognition, followed by measurement of hippocampal dopamine D2 receptor expression and dendritic spine density. From approximately postnatal day (P)35 through P49, C57BL/6J mice were injected with 1 mg/kg of isotretinoin intraperitoneally for 10 total injection days. From approximately P50 through P52, mice underwent novel object recognition testing, followed by a 6-minute forced swim test on approximately P53. Brains were extracted for western blotting of dopamine D2 receptor density in the hippocampus and striatum, and Golgi-Cox tissue staining for analysis of dendritic spine density. To date, our results indicate an increase in immobility in the forced swim test, but no effect on novel object recognition, in isotretinoin exposed mice compared to controls. These results suggest that adolescent isotretinoin exposure is associated with depressive-like behavior in mice but does not influence hippocampal dependent memory formation. Ongoing research aims to correlate hippocampal dopamine D2 receptor expression and dendritic spine density with our behavioral results.

Peterson, Elizabeth

Institution: *VA - The University of Virginia's College at Wise*

Discipline: World Languages

Author/Contributors:
Elizabeth Peterson

Abstract Name: **Luis Miguel and Mexicanidad in Boleros and Mariachi Music**

In Mexico, Mexicanidad is the essence of embodying Mexican culture through nostalgia, love, masculinity, and a strong display of emotions in how one lives. The music of bolero, a traditional love song in Mexico, and mariachi, Mexico's musical symbol of nationalism, are the artistic representations of Mexicanidad that reigned on radio stations and in concerts in the country. A contemporary singer that has made these two genres appealing to recent generations is Luis Miguel. While Luis Miguel began his career singing pop music, a genre that is far removed from the traditional culture of Mexico, his multiple bolero and mariachi albums are perhaps among the most successful in his career. In this presentation, I will analyze the ways in which Luis Miguel embodies Mexicanidad through bolero and mariachi songs. I will specifically compare Luis Miguel with two of the greatest bolero artists and mariachi singers of Mexico, Agustín Lara and Pedro Infante, respectively, emphasizing the different ways in which Luis Miguel embodies Mexicanidad in his videos and performances. I argue that despite Luis Miguel's early success with pop music, he was able to embody Mexicanidad through the emotional lyrics of his bolero music and his stage presence during mariachi concerts.For my analysis, I will concentrate on the similarities of Luis Miguel's song "No se tú" and "Solamente una vez" by Agustín Lara, underscoring elements of Mexicanidad within bolero. Regarding mariachi music, I compare Luis Miguel's version of "El viajero" with "Esta noche" by Pedro Infante.

Peterson, Greta

Institution: *VA - The University of Virginia's College at Wise*

Discipline: **World Languages**

Author/Contributors:
Greta Peterson

Abstract Name: **The Performativity of Gender in the Concerts of Juan Gabriel and Harry Styles**

Mexican icon Juan Gabriel and British singer Harry Styles are both musical artists well-known for their remarkable careers in entertainment. They excel in their musical performances and have been publicized for their fluid movements, eccentric wardrobes, and playful audience interactions in concerts around the globe. Even though they are from different countries and a couple of generations apart, Juan Gabriel and Harry Styles have, over the courses of their careers, adapted their conforming, masculine displays of gender to disregard the norms of masculinity in favor of a more feminized performativity of gender. Each have adapted their gender performances, whether that be through the use of sequins or a simple hand on the hip, to accordingly reflect something more often associated with feminine standards. Using Judith Butler's notions of gender construction, I explore how Juan Gabriel and Harry Styles have performed femininity during their live concert performances. I analyze how their vivacious dances on-stage, colorful concert attire, and mirthful interactions with their respective audiences contribute to this feminized display of gender. By analyzing the mannerisms of these two pop stars, in this presentation, I will call into light the ways in which gender is something that is performed. Through glancing into the specificities of these two men's concerts videos, I show that Juan Gabriel and Harry Styles challenge social conventions and that gender can, indeed, be an act.

Peterson, Kaitlin

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Joe Berg,
Adrienne Leuck,
Kaitlin Peterson,
Kimberly Sanchez,
Madeline Wood,
Michael Ziegler

Abstract Name: **Smartphone Use on Well Being**

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphone use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitive, and social well-being of individuals across the generations. Previous research tendedto focus on one aspect or another of well-being, for example sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are impacted by Smartphone use.

Peterson, Natasha

Institution: *MT - Montana State University - Bozeman*

Discipline: Biology

Author/Contributors:
Natasha Peterson

Abstract Name: **Growth curves of International Space Station- isolated organisms**

Biofilms are groups of microorganisms which cover surfaces by attaching to each other and the surface. These are advantageous to microorganisms as biofilms stimulate increased growth and survival of cells. Biofilms are concerning because they can cause obstruction and corrosion, especially in moist and submerged environments such as wastewater systems on spacecraft. NASA is interested in studying biofilms in space as obstruction of water systems can force a pause in operation of the International Space Station(ISS) water recycle system. Additionally, the microgravity environment aboard the ISS stimulates the growth of biofilms as well as antibiotic resistance of organisms. The nature of the biofilms aboard the ISS may pose health concerns to the astronauts working there. Research presented will include growth curves for organ-isms isolated from the ISS wastewater system. Four of the species are bacteria, Burkholderia contaminans, Cupriavidus metallidurans, Methylobacterium organophilum, and Ralstonia insidiosa and one of the species is a fungus, Lecythophora mutabilis. Growth curves presented will include these five organisms, both alone and in combination. Experiments feature a medium called ersatz, a culturing medium which was designed to represent the ISS wastewater system nutrient availability and chemical composition. Results of this project are important as they provide significant information regarding the organisms and how they interact. This information is useful to an ongoing Montana NASA EPSCoR project as it can explain how the interactions of the five species may affect the growth of the others. An example would be if multiple bacterial species grow more rapidly when in culture with the fungus, then targeting the fungus may help in mitigating biofilm growth. Additionally these results will allow for the organismal growth in future Montana EPSCoR experiments to be compared to a normal growth rate.

Petrangelo, Tessa

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
K. Rose Fiore *Tessa Petrangelo*

Abstract Name: **Exposing Sperm to Thalidomide Prior to Fertilization Results in Abnormal Embryogenesis in Sea Urchins**

Thalidomide, originally introduced in the 1950s for off-label treatment of hyperemis gravidarum, resulted in birth defects in approximately 10,000 children exposed in utero (1957-1962). Due to its anti-inflammatory properties and non-addictive nature, the U.S. FDA approved thalidomide in 1998 for treatment for leprosy and other diseases with inflammatory components. Clinical pharmacokinetic research indicated that thalidomide can be found in semen. Whilst the FDA classified thalidomide as unsafe for use by pregnant females, little work focused on the effects on embryos exposed to thalidomide through either sperm or semen. The FDA Thalidomide REMS program recommends males using protection for pregnancy prevention while taking the drug and for 4 weeks after stopping treatment. Sea urchin embryos serve as good model organisms for studying early embryogenesis. They are also sensitive to thalidomide. Previous research in this lab noted that sea urchin embryos fertilized with thalidomide pretreated sperm exhibit five times more abnormalities than controls. To examine this in more detail, we will generate a dose response curve for sperm pretreatment and observe embryos at 24-hours (gastrula), 48 hours (blastula), and 72 hours (pluteus) for malformations and other abnormalities. To evaluate teratogenesis compared to toxicity, we will evaluate cell viability and apoptosis comparing treated embryos to controls. We expect to find that higher concentrations of thalidomide sperm exposure will yield a higher percentage of malformations in embryos compared to controls. In addition, immunofluorescent cell dyes will be used to evaluate cell viability and apoptosis. We anticipate that embryos resulting from thalidomide pretreated sperm will exhibit differences in cell viability and apoptosis induced cell death compared to controls. This research addresses broader implications about the potential paternal contributions to teratogenesis.

Pfaff, Devyn

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Devyn Pfaff,
Brenna Moeller,
Ryleigh Lemanczyk,
Chrissy Headley,
Mary Endres

Abstract Name: Racial-Ethnic Identity and Academic Success B

There is immense discussion on what helps orhinders academic success. A person knowing who they are, no matter who, tends to know what they want and how to get it. This is not different in the academic setting. There are many different levels of understanding who we are within the culture from which we come. This study aims to connect several components of identity development with the resulting success in college. The aim is to see how the level of connection with one's racial-ethnic group, awareness of the perceptions by others and how one's racial-ethnic group is seen through the lens of academic achievement will impact the overall success in college. Other areas of interest in this study include college experience and how it impacts the motivation to attend classes and involvement in on campus activities connecting the student to the college leading to academic success. The final area that will be considered in this research is the level of college preparedness of the student and how the family or culture contributed to that preparedness. Correlational analysis will be completed through data collection in the spring semester of 2023.

Pfeffer-Kleemann, Daniel

Institution: ***IA - Luther College***

Discipline: Chemistry/Materials Science

Author/Contributors:
Hayden Cronin,
Emma Pichelmann,
Daniel Pfeffer-Kleemann

Abstract Name: Heavy Metal Accumulation onto Sediments in Northeast Iowa

Metal supplements are commonly added to hog feed to prevent post-weaning diarrhea and promote growth in piglets. The manure that is produced by the hogs is then injected into nearby fields, where leaching or erosion could cause metal loss to the watersheds. Metal cations transported in runoff could adsorb to surfaces of sediment particles, resulting in a change to the overall sediment composition and microbial communities. To determine if metal cations are adsorbing to sediment particles due to agricultural runoff, we quantified the metal composition of sediment samples from sites downstream of fields where hog manure is injected as well as controls in northeast Iowa. Measurements of acid-digested samples were done with ICP-OES and results were used to identify differences among sampling locations. These results can be used to understand the extent to which the addition of metals to animal feed has an effect on local environments.

Pflaum, Leah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication/Journalism

Author/Contributors:
Abbey Joyner

Abstract Name: **The Associations between Belongingness, Trust, and the Willingness to Donate to One?s Alma Mater**

Donations are a vital part of keeping universities up and running across the globe. Thus, it makes sense that universities have a vested interest in fostering relationships with students that will generate future donations. This study examines the degree to which feelings of belongingness, trust, and engagement in campus activities affect an individual's willingness to donate to their alma mater. The 72 participants in this study represent a diverse group of students at the University of Wisconsin-Eau Claire. The findings indicate that feelings of belongingness with the university and the belief that one can trust the university are more strongly associated with a willingness to donate. Engagement in campus activities was not significantly associated with a willingness to donate. Thus, we learned that while it is important for a university to provide opportunities for students to engage in campus life, the university should spend equal time fostering a sense of belongingness and trust with their students.

Pflum, Tate

Institution: *CA - Cuesta College*

Discipline: Business

Author/Contributors:
Tate Pflum,
Adolfo Chairez Maldonado,
Carson Dorough

Abstract Name: **Business Model for a Food and Beverage Truck on Campus**

This presentation articulates about the different aspects of designing and launching a business model for a beverage and food truck at a college campus. It covers the specifics of the bureaucracy, regulations, and legal implications; the cost and benefit analysis, including start-up and operating costs; and the marketing study, considering students' interests and habits, and cafeteria operation hours. The business model provides an extended menu along with additional hours of operation past what the cafeteria offers. The business works alongside the campus cafeteria, not competing with it though. The business model also provides experience and skills for the members of our community. It plans on partnering with local non-profit organizations to get the labor needed to operate the food and beverage cart on the day-to-day basis, creating in this way job or internship opportunities for students and people who otherwise would have a harder time obtaining a first managerial, cooking, marketing, or in general, professional experience.In addition to describing how to operate a food and beverage truck, the presentation will also show how beneficial it will be in the long run for the students at a community college and the local community at large. We have funds to actually launch the project and we expect our presentation to be detailed enough as to help other campuses actually launch their own beverage and food truck staying within an initial budget of $20,000. The operational costs and the numbers needed to make it sustainable and profitable in the long run are also included.

Pha, Kong Pheng

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Kong Pheng Pha,
Paji Yang

Abstract Name: **Remaking Culture: Hmong American Queer and Refugee Identities**

This current research project asks: What are the experiences of queer Hmong American young adults as they reimagine the concept “Hmong culture”? How do queer Hmong American young adults navigate themes such as identity, religion and spirituality, language, and marriage in ways that are empowering? This study utilized a methodology of targeted contact to recruit research participants. We reached out to personal contacts within our social networks using social media and email as methods to promote our research project. Drawing from qualitative interviews with six participants who self-identity as Hmong and LGBTQ within the Eau Claire and Minneapolis-St.Paul region, this study seeks to understand transforming notions of Hmong American culture and belonging in the United States. Qualitative analysis and close reading of interview transcripts allowed the researchers to establish prevailing themes, including religion/spirituality, sexuality, language, empowerment and resistance, and marriage, and their subsequent implications on Hmong culture and identities in the U.S. This study reveals that Hmong LGBTQ individuals experience constant erasure within their ethnic communities due to the historical nonexistence of terminology to name identities, and queer and sexual identities in particular. However, Hmong LGBTQ individuals have found ways to remake themselves in the diaspora by drawing upon their unique indigenous cultures and religion to maintain some sense of Hmong spirituality and language in their lives. Contrary to dominant narratives that communities of color may not be as “accepting” of gender and sexual difference, Hmong LGBTQ individuals reveal that they are actively seeking forms of belonging in their own communities in ways that are empowering. This study contributes to deeper understandings of changing Hmong communities in the U.S. by examining gender and sexual identities as they intersect with Hmong refugee identities.

Pham, Khang

Institution: *CA - California State University - Fullerton*

Discipline: Computer Science/Information Systems

Author/Contributors:
Giovanni Martinez *Seena Mohajeran* *Khang Pham*

Abstract Name: **Titan Providence: Autonomous Drone System utilizing AI and GPS for Navigation**

Data and analysis of information have become a crucial aspect of society’s current development, allowing accurate awareness of our environments, and benefitting maintenance, safety, and overall innovation. At the same time, the big data trend has grown in popularity, and the use of drones has also taken off to be considered valuable data collection devices. However, the control of the drone always lies with the pilot who uses visual tracking to determine its position and orientation. To overcome these issues, we propose an advanced technology that allows a drone to autonomously fly with little to no input from a human pilot. Differing from common Unmanned Aerial Vehicle (UAV) systems, Titan Providence implements AI vision with a GPS system, allowing for fully autonomous completion of a given “mission”. Our objectives for this project include the construction and design of the drone framework, adaptive pathfinding, and awareness, in addition to task assignments.To achieve our goals, we integrated a Raspberry Pi with a compatible flight control module with additional telemetry and peripherals docked on a custom quadcopter chassis that allows modularity and expansions in accordance with a task’s outline and requirements. By using these two systems in conjunction, we passively maintain the stability of the system through its inertial measurement unit (IMU) and individual multirotor electronic speed controllers (ESC), allowing further independence of the system’s microcomputer. Regarding autonomy, the Raspberry Pi hosts the machine learning platform known as Tensorflow lite which would allow the drone to recognize obstacles and relay this information to the flight computer to avoid them. We also plan to utilize OSMNx which would allow the drone to create routes through urban environments where extra care and consideration for the law, powerlines, and private property is needed.

Pham, Khanh

Institution: ***TX - Texas Christian University***

Discipline: Economics

Author/Contributors:
Khanh Pham

Abstract Name: The Determinants of Business Cycles: An Empirical Examination of Competing Theories

The 2008 Financial Crisis came as a shock to many in the economics discipline, as well as to those in the general public. Despite being the deepest and longest economic slump since the Great Depression, most mainstream economists found themselves unable to offer a consistent explanation of its cause rather than " something bizarre happened". In contrast, some non-mainstream schools of thought have argued that they saw it coming and that they can offer insightful explanations of the Great Recession. Two of those were the Austrian and Post Keynesian. This paper lays out the basic Austrian and Post-Keynesian explanations of the business cycle and then shows how they employed these to predict/ explain the Financial Crisis. I then conduct an empirical test of each in an attempt to determine which appears to have the most support from the data.

Pham, Nathan

Institution: ***MN - Minnesota State University - Mankato***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Margaret Anderson *Mamy Hamed Fofana* *Nathan Pham*

Abstract Name: Estimating Settlement of Strip Footings on Soft Clay Stabilized with a Granular Trench

Research on foundation systems has brought increasing opportunity in the building construction sector for greater efficiency and accuracy in design. Available research development shows exploratory opportunity with a focus on quantifying the improvement offered by ground reinforcement through granular trench support in clay soils. Settlement analyses will be performed for a continuous strip footing placed on soft clay soil stabilized with a granular trench. The analysis software PLAXIS and LimitState:Geo will be used to develop models for evaluation and provide ultimate bearing capacity the along with settlement for considered configurations. Results from the theoretically developed model will be compared with published research for physical modeling and numerical method results in literature. The results will help the engineer to estimate the settlement when considering the inclusion of a granular trench beneath the strip footing. Design parameters such as trench depth, trench width, footing width, and friction angle of the granular material in the trench will be varied in this study to investigate their influence on the foundation settlement. Phase 1 of this research, which focused on quantifying the ultimate bearing capacity, was completed and concluded that these design parameters influence the design significantly. The current research (Phase 2) continues the investigation efforts of the various design loading parameters based on a set settlement. The models being used in the settlementevaluated used ratios of trench width to foundation width and then increasing the trench depth to width until the loading needed shows a plateau. With the addition of settlement, the engineer will be able to create a comprehensive foundation design for the problems in hand byaddressing the maindesign constraints: strength and settlement. As an availableresource, the results will provide progression in ability to accurately design reinforced foundation supports in building projects.

Pham, Tyler

Institution: *MN - Hamline University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Tyler Pham,
Erik Asp

Abstract Name: **DOES PREFRONTAL CORTEX DAMAGE INCREASES PSEUDOSCIENTIFIC, CONSPIRACY THEORY, AND PARANORMAL BELIEFS?**

Many people hold beliefs that conflict with current evidence and general human knowledge. Epistemically suspect beliefs (ESB) can include propositions from pseudoscientific, conspiracy theory, and paranormal domains. Understanding the neural and psychological mechanics of why individuals endorse ESBs, such as the false idea that MMR (measles, mumps, and rubella) vaccines cause autism; may help mitigate the personal cost and negative economic impact that the general acceptance of empirically unsubstantiated claims produces, such as the billions lost to fraud. The False Tagging Theory (FTT) posits that the ventromedial prefrontal cortex (vmPFC) is critical for skepticism and doubt. Doubt of a proposition causes critical thought that leads to falsification of the proposition. Without doubt, the proposition goes unchecked and is accepted with little to no thought. When the vmPFC is damaged from stroke or tumor resections, individuals should have a general increased credulity toward propositions. Healthy individuals often have skepticism toward ESBs; doubt is often utilized upon mental representation of the idea and then is falsified later. The FTT predicts that damage to the vmPFC will reduce doubt toward ESB propositions resulting in an increased endorsement rate. To test our hypothesis, we used patients from the Patient Registry, Neurology Department, University of Iowa; we gave 9 patients with vmPFC damage, 11 brain damage comparisons or “other brain damage” (BDC), and 15 healthy comparison (HC) ESB propositions and had them agree or disagree on a 1-9 Likert scale. Results indicated that patients with damage to the vmPFC had increased ESBs relative to BDC and HC. These findings support the FTT and argue that the neural integrity of the ventromedial prefrontal cortex is necessary for skepticism toward claims that are unsubstantiated by current evidence and general human knowledge.

Pham, Tyler

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Computer Science/Information Systems

Author/Contributors:
Tyler Pham,
Connor Kamrowski,
Jordan Langlois,
Cameron Senor,
Pavithra Devy Mohan,
Rahul Gomes,
Joseph Wildenberg

Abstract Name: **Deep learning Approach for Detection of Inferior Vena Cava Filters from CT Scans**

IVC filters (IVCF) perform the important function of breaking down blood clots. However, most IVCF are temporary, and delays in their removal can cause complications. Current tracking of temporary IVCF is performed manually,which can delay treatmentif the patient transfers healthcare providers.This study proposes apipeline to automate detection of IVCF.A patch-based 3D Convolutional Neural Network (CNN) is created using a database ofpatient’sabdominal CT scans. The data is preprocessed using normalization techniques, along with a window/level to enhance the brightness of dense materials, which makes the metal IVC filter easier to detect. The database is split into training and testing, and patches are extracted from each. A postprocessing step is performed on the segmentation, where neighborhood connectivity is used to remove small objects. The scan is then classified as either IVC or non-IVC if the number of positive slices is greater than our selected threshold.The model’s DICE score reached 0.93 for training and 0.81 for validation. The prediction pipeline was able to accurately detect scans with IVC filters 100% of the time. The false positive rate on scans from normal patients was also 0.The proposed IVCFfilter prediction pipeline requires lesscomputing power while providing high accuracy, therebyreducing the time needed to track IVCFin health records.

Phillips, Deanna

Institution: ***PA - Susquehanna University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Deanna Phillips,
Derek Straub

Abstract Name: Monitoring Particle Pollution Through Inexpensive Programmable Devices

Fine particulates in the atmosphere are a serious threat to human health and are typically emitted from a wide range of sources, including industrial activities. Breathing in fine particulate matter (PM) increases the risk for respiratory and cardiovascular diseases, resulting in millions of annual premature deaths around the world. Regulations and technologies for reducing the total mass of emitted particles less than 2.5 microns in diameter (PM2.5) have improved over the years, but spatial and temporal inconsistencies in monitoring techniques is a growing issue. This is especially true in low- and middle-income locations with little access to data that would support efforts to regulate local polluters. This study aims to assess the ability of inexpensive, open-source hardware and accompanying environmental sensors to provide accurate data for PM2.5 concentrations, particle counts in various size ranges, and meteorological conditions over time. Four low-cost Arduino microcontrollers were programmed to measure and store this data at desired intervals, and the results were compared to each other as well as to a research-grade device. The Arduino devices have provided nearly identical data at a single indoor location and are comparable to the reference device. Weather-proof setups were also constructed to contain each microcontroller with the objective of making PM2.5 measurements at an outdoor local source of PM, like a busy roadway. It is anticipated that the Arduinos will be able to characterize local PM2.5 sources at low cost and therefore demonstrate the potential for monitoring the environment more widely across communities for personal health purposes.

Phillips, Kobe

Institution: ***FL - University of South Florida***

Discipline: Biology

Author/Contributors:
Kobe Phillips *Matthew Barrett* *Jennifer Thaler*

Abstract Name: Investigating the impacts of parasitism on herbivory & chemical communication in an insect herbivore.

Background and Purpose- Parasitoid insects are well known for their role as regulate herbivores though trophic cascades and in their ability to manipulate their hosts behavior. The presence of parasitoids has been found to influence communicative behaviors such as calling in crickets, however, little is known about how parasitism could directly affect communication within a species. In this study, we investigated how parasitism by Celatoria setosa [Diptera: Tachinidae] can affect the release of a pheromone - vittatalactone - and affect herbivory in Acalymma vittatum [Coleoptera: Chrysomelidae] adult beetles (SCB).Methods- Wild A. vittatum and parasitoid flies were collected from organically managed farms from June through August 2022 in the Finger Lakes region of upstate New York, USA. Male adults' beetles were directly parasitized in laboratory conditions. We then collected headspace volatiles from parasitized and non-parasitized beetles in groups of six for 72 hours three days post-parasitism. In addition, we measured leaf area removed in single parasitized and non-parasitized female adult A. vittatum every two days over ten days and analyzed the herbivory utilizing ImageJ software.Results- Parasitized male SCB produced less vittatalactone than non-parasitized beetles. We did however find that individual females parasitized consumed less leaf material than non-parasitized females two days post-parasitism and four days post-parasitism, and then consumed more leaf material than non-parasitized beetles six days post parasitism. Conclusions- The results highlight two dynamic changes in insect herbivore behavior in response to parasitism, suggesting that parasitoids may be able to disrupt communication signals in their hosts, thus disrupting sexual reproduction and aggregation behavior. This is the first study to explore the predator-prey like interaction between A. vittatum and C. setosa on behavior, which may play a role in integrative pest management of SCBs in the field. Key Words: Parasitoids, Parasitism, Insect Behavior, Chemical Communication, Herbivory

Phillips, Nicholas

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: FAN Abstract

Author/Contributors:
Jennifer Chapman,
Nicholas Phillips

Abstract Name: The Joys and Challenges of Collaborative Research in the Arts: A Discussion Session for Faculty in the Fine and Performing Arts

Join faculty from the fine and performing arts for a conversation about the joys and challenges of conducting collaborative research/creative inquiry with undergraduates. You'll have a chance to talk with colleagues from different departments and institutions across the country about the unique perspectives that undergraduates bring to different arts disciplines, ways that collaborative research projects enrich our work as faculty, and the unique challenges we face in the arts when we involve undergraduates in research. Session leaders – Jennifer Chapman (UW-Eau Claire theatre) and Nick Phillips (UW-Eau Claire music) – will facilitate a structured discussion with the group. There will also be time for participants to bring specific questions for the group (such as feedback on a current project, or advice on a current challenge) and for participants to ask for/share ideas about future projects.

Phillips, Taylor

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Harry Jol *Philip Reeder* *Richard Freund*
Michael Barrow *Delia Ihinger* *Tristan Wirkus*
Isabel Radtke *Joseph Beck* *Bri Jol*
Caroline Hayes *Mikaela Dettinger*

Abstract Name: Ground Penetrating Radar Analysis of Holocaust Mass Grave Site in Alytus, Lithuania

As many as 70,000 Jewish people were killed in the Vidzgiris forest located southeast of the city of Alytus in Nazi German occupied Lithuania from 1941 to 1944. Currently, several monuments stand in the forest memorializing those who lost their lives including one such monument constructed by the Soviet Union. Eyewitness reports suggest there could be mass graves located near the Soviet monument. This project uses ground penetrating radar (GPR) to investigate a site southeast of the monument. GPR is a tool that uses electromagnetic waves to create a view of the subsurface. GPR is an excellent tool for non-invasive geoarchaeology as it does not disturb the subsurface. A grid measuring 8m x 15.25m was cleared east of the monument in a vegetated opening in the forest. The gride was split into 32 lines with a 0.25m spacing and data were collected along those lines using a pulseEKKO Pro GPR system with an antennae frequency of 500 MHz and a 0.02m step size as measured by the on-board odometer. Topography of the grid was collected at 1m intervals using a Topcon RL-H5A self-leveling laser, LS-80L receiver, and measuring rod. The data is currently being processed and visualized using EKKO_Project V5 software. Based on analysis of the raw data in the field, there is an unnatural feature present in the southwest corner of the grid. Upon completion of data processing, it is anticipated that the unnatural feature will be interpreted as a burial trench. However, exposed wiring located about 10m northeast of the grid suggests more recent digging in the area, which could be the cause of the unnatural feature. GPR is and will continue to be a crucial tool in Holocaust research and will help to memorialize those who lost their lives to the atrocities of the Nazi genocide.

Piaszynski, John

Institution: *IA - University of Iowa*

Discipline: Psychology/Neuroscience

Author/Contributors:
John Piaszynski *Kanchna Ramchandran* *Joel Bruss*

Abstract Name: **The Lesion Network Mapping Approach to Cognitive Neuroscience Research: Case Study of Discounting**

This study incorporates an emerging method of lesion analysis known as “lesion network mapping” (LNM) to explore functional neurological networks that are potentially implicated in temporal and probability discounting. LNM combines both anatomical lesion maps and functional connectivity data. Rather than performing analysis at the level of individual lesions as existing methods do, LNM considers each lesion as part of a functional network, which becomes the new unit of analysis. First, binarized focal lesion masks are used as seed regions in a normative functional connectome (FC) to produce correlations between the average BOLD signal in the affected area with each voxel in the functional scan. This is repeated for every image in the FC, with the results being combined to produce a lesion network for each subject in the lesion dataset. This data becomes the input to voxel-wise general linear models with discounting score as the response variable. Permutation testing is used to determine significance of results, which is accomplished using PALM (Permutation Analysis of Linear Models), an open-source software package. This approach overcomes some of the limitations of existing lesion-based research methods: it allows information to be obtained for areas in which there is no lesion overlap in the dataset, and conclusions can be more readily drawn about networks rather than individual regions. This project uses over 120 subjects from the Iowa Lesion Patient Registry in the Carver College of Medicine who have a mapped, chronic, focal brain lesion and have completed at least one neuropsychological task that assesses temporal or probability discounting. Functional connectome data is sourced from the GSP1000 Preprocessed Connectome, a publicly available subset of the Brain Genomics Superstruct Project, which contains resting-state functional MRI data for 1000 subjects. We discuss the process of data analysis for this project.

Pichelmann, Emma

Institution: *IA - Luther College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Hayden Cronin,
Emma Pichelmann,
Daniel Pfeffer-Kleemann

Abstract Name: **Heavy Metal Accumulation onto Sediments in Northeast Iowa**

Metal supplements are commonly added to hog feed to prevent post-weaning diarrhea and promote growth in piglets. The manure that is produced by the hogs is then injected into nearby fields, where leaching or erosion could cause metal loss to the watersheds. Metal cations transported in runoff could adsorb to surfaces of sediment particles, resulting in a change to the overall sediment composition and microbial communities. To determine if metal cations are adsorbing to sediment particles due to agricultural runoff, we quantified the metal composition of sediment samples from sites downstream of fields where hog manure is injected as well as controls in northeast Iowa. Measurements of acid-digested samples were done with ICP-OES and results were used to identify differences among sampling locations. These results can be used to understand the extent to which the addition of metals to animal feed has an effect on local environments.

Piddock, Abigail

Institution: *VA - Liberty University*

Discipline: Biology

Author/Contributors:
Abigail Piddock,
Caroline Wethington,
Brooke Chapple,
Kyra Goyette,
Nyle Shank,
Hannah Wilson,
Josiah Harris,
Gibson Huff

Abstract Name: **Effects of seasonality on the infection intensity of the amphibian skin pathogen Batrachochytrium dendrobatidis on crayfish**

Batrachochytriumdendrobatidis(Bd) continues to be a major contributor to global amphibian declines and lowers the quality of life of manyother creatures. Bd is a chytrid fungus that causes mortality of many amphibians and is known to damage the gills of crayfish. As potential carriers of Bd, crayfish are likely a major source of moving Bd from one aquatic habitat to another. Such aquatic environments are essential for amphibian life history patterns. One way to test the overall health ofan aquatic environment regarding Bd is to measure Bd levels in potential carriers. Since the crayfish carapace is constantly interactingwith the external environment, it is a convenient location to take these measurements. However, periodic molting can impactthese levels and skew the results. A more reliable indication of Bd prevalence and intensity in the crayfish population can befound by measuring the Bd levels in the GI tract, as it is known to embed here as well.This project investigates the seasonal Bd infection prevalence on a local crayfish populationby collecting DNA with swabs(carapace and GI tract)and by confirming infection intensity with pathogen specific real-time PCR (qPCR).

Piechowicz, Megan

Institution: *CT - Eastern Connecticut State University*

Discipline: Biology

Author/Contributors:
Megan Piechowicz *Kate Arildsen* *Anne Le*

Abstract Name: **mRNA expression analysis of a novel deregulated anthocyanin pigmentation mutant in the model legume plant Medicago truncatula**

Anthocyanins are flavonoid pigments that are produced by plants, which can be seen in leaves, stems, and petioles. Anthocyanins are responsible for the bright red color of strawberries, as well as blue, red, and purple pigments in flowers. Consumption of anthocyanins is linked to health benefits to humans, including prevention of neurological disorders, heart conditions, and some types of cancer. We are using a forward genetics approach to find genes that control anthocyanin pigmentation in plants. Previously, a novel deregulated anthocyanin pigmentation (dap) mutant was identified in the model legume plant Medicago truncatula. This plant is used for research as it grows quickly, and has a fully sequenced reference genome, allowing for better understanding of genetic information. In wild-type (WT) plants, anthocyanin pigmentation is visible as red spots on leaves. In the dap mutant, significantly increased red spots occur throughout top and bottom parts of leaves. messenger RNA (mRNA) expression analysis of biosynthetic and transcriptional regulator genes in dap mutant compared to the WT, using the reverse transcription quantitative real-time PCR (RT-qPCR) technique was performed. Total RNA was extracted from WT and dap mutant leaves and treated with deoxyribonuclease enzyme to remove any residual genomic DNA. Then, mRNA was converted into complementary DNA and used in RT-qPCR reactions. I will present data on the mRNA expression of several biosynthetic genes and transcriptional factor genes that regulate anthocyanin pigmentation. Results showed that several genes were significantly upregulated in dap mutant. Understanding molecular and genetic mechanisms of how anthocyanin pigmentation is regulated dap mutant will help us to develop agricultural crops with increased anthocyanin content through genetic manipulation for medicinal and nutritional benefits.

Pierce, Mallory

Institution: ***TX - Texas Woman's University***

Discipline: Communication Science and Disorders

Author/Contributors:
Jessica Shidler,
Mallory Pierce,
Cynthia Gill-Sams

Abstract Name: Rehearsal Visualization Therapy: The Test of Following Directions Evaluation

Children with language and learning disorders often have co-occurring difficulties in remembering and following verbal directions. This is often due to the syntactic complexity of the directions along with the children's working memory limitations. Few research studies have examined the effects of therapy designed to assist children in improving their ability to follow directions. Due to the lack of research, speech-language pathologists struggle to find evidence-based practices for increasing children's direction-following skills. The current study examined the effects of a therapy called "rehearsal-visualization intervention" on children from 5.0-10.5 years of age. This intervention requires the child to repeat or rephrase the given instruction and to imagine the instruction as it was carried out and completed. Forty-five participants, who had been diagnosed with a language or learning disability, completed the intervention under the direction of speech-language pathology (SLP) graduate students in the public schools of Texas. Data collected by the SLPs was analyzed for changes in direction-following ability as measured by the Test of Following Oral Directions, an assessment to determine the difficulty of directions based on linguistic complexity. Pretest and posttest data from the participants indicated that 86.67% of the children demonstrated increases in the difficulty of the directions they were able to carry out. This suggests that rehearsal-visualization strategy training may offer an effective way to teach elementary-aged children to process and carry out difficult instructions.

Piotrowski, Annabelle

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Mathematics

Author/Contributors:
Annabelle Piotrowski

Abstract Name: Optimizing Course Schedules with Linear Programming in Python

Scheduling classes is a challenging and time-consuming task. To make this process less time-consuming and ensure an optimal result, we are using Python and linear algebra. We are using the Cplex library to build a model consisting of an objective function and a system of constraints. The objective function represents instructor satisfaction with different courses and the constraints represent limitations such as the fact that one instructor cannot teach two courses at the same time. Our model can successfully use interval variables to optimize small example schedules. We will present results involving limits on the number of credits and preps a professor teaches, as well as the results of applying our code to scheduling math courses at UWEC.

Piper, Ava

Institution: ***FL - The University of Tampa***

Discipline: Psychology/Neuroscience

Author/Contributors:
Isabella Eiland *Ava Piper* *Benjamin Marsh*

Abstract Name: Just Another Pretty Face? How Physical Attractiveness Affects Memory of Same-race and Other-race Faces

Undoubtedly, we have seen somebody casually going by and instantaneously determining whether they are attractive or not. Intuitively, attractive faces draw attention; thus one would expect they are memorable. Past studies have shown that faces outside of one's race are more poorly remembered than faces within one's race, a phenomenon called the cross-race effect (CRE). However, if attractive faces have a memorable quality, perhaps highly attractive other-race faces are remembered just as well as same-race faces. Thirty-four White female students studied 48 faces that were White, Latino, Black, and Asian and were classified as High attractiveness, Average attractiveness, and Low attractiveness. Afterward, their memory of those faces was tested by intermixing the studied faces with 48 new faces. Each face was presented one at a time alongside survey questions where they responded via mouse click whether they remember seeing the face. Additionally, we used an eye-tracking device to determine whether attraction or race influenced how long they looked at a face while taking the memory test. The results were rather surprising in that we discovered that more participants tended to recall faces low in attractiveness more accurately than faces high in attractiveness. Unsurprisingly, White faces were more accurately recalled than all other-race faces. Moreover, there was an interaction effect between race and attractiveness in that the CRE occurred among faces low in attractiveness, but not faces average or high in attractiveness. While this result was predicted, it was expected to be due to improved memory for other-race faces. However, it was largely due to poorer memory for same-race faces. As for the eye tracking data, participants visually fixated more often on high-attractiveness than low-attractiveness faces during the test phase. This behavior is either a sign of highly attractive faces' alluring quality or participants' uncertainty about their memory.

Plant, Matthew

Institution: ***OK - University of Central Oklahoma***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Ryan Glazier,
Kyri Funderburk,
Matthew Plant

Abstract Name: Development of a Wound Infection Detection Device

An infection within a wound is a devastating circumstance that can potentially turn a simple graze to a multi year long healing process. The latest methods for wound infection detection are cumbersome and time consuming. These practices often need to undress the wound and leave it exposed for a few seconds or up to an hour. Undressing a wound is counterproductive to the healing process and this small window of exposure can possibly result in an infection in itself. There is a need for a tool that allows for active infection detection that causes very little to no compromise to a wounds healing environment. The device we propose is placed amongst the gauze whenever a wound is initially dressed and implements an array of sensors to collect a wide range of data. The type of data we plan to collect is pH, pressure, moisture, and temperature. We also want to have an integrated RFID or WIFI module so that this data can be wirelessly collected from the device. The specific methods involved for this developmental project start with designing and testing the responses of multiple sensors in an infected wound environment compared to a healthy environment. This is done so that a reference point can be made when a healthy wound transitions to an infected wound. Currently, progress is being made towards gathering preliminary data and calibration of our sensors for our design. Although the project is still in its early stages, It will be beneficial to observe the outcomes from the system in simulated wound environments to provide a baseline for further research and applications.

Plotzke, Jeanetta

Institution: *IA - Iowa State University*

Discipline: Sociology

Author/Contributors:
Colton Poor *Jonah Gray* *Jeanetta Plotzke*
Jennifer Seth

Abstract Name: **Student Perspectives on Sustainability at Iowa State University**

Today's university students will face unprecedented environmental, economic, and societal sustainability challenges upon graduation. The Sustainability in Curriculum Change Project (SiC-CHANGE) employed focus groups and a student body survey to understand Iowa State University (ISU) students' perspectives on how well the curriculum and extracurricular activities are preparing them to address the various sustainability challenges that society faces. Although ISU has incorporated sustainability language into its strategic plans and actions over the years, we are not aware of any systematic efforts to assess the adequacy of the university's efforts to increase student knowledge and skills related to sustainability. This research project is a rigorous effort to learn from students about their interest in and their experiences with sustainability at ISU. Twenty-one students from select colleges participated in focus group discussions between October 2021 and December 2021, and 1,206 students responded to a web-based survey of juniors and seniors conducted between April 18 and May 16, 2022. Our sample represents all colleges offering undergraduate degree programs at Iowa State University. Most respondents placed high importance on addressing environmental, economic, and social sustainability outcomes articulated in the UN sustainable development goals. Students at Iowa State feel empowered to solve climate change issues in the future, but they want more courses that integrate sustainability into their curriculum. Additionally, students believe that public universities should be leaders in sustainability. Our results show that most students don't think Iowa State prioritizes sustainability in education or that they are leaders in sustainability. Survey and focus group participants suggested many ways that ISU could incorporate this topic into the ISU experience to better prepare students with the knowledge and skills needed to face present and future sustainability challenges.

Plumley, Jacob

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Biology

Author/Contributors:
Jacob Plumley

Abstract Name: **Comparison of Calcium Phosphate and Liposome-based Transfection Efficacy in CHO-K1 Cells**

Chinese hamster ovary (CHO) cells are epithelial cells used in biological research and industrial production of recombinant proteins. Their popularity is due in part to high tolerance to changes in environmental parameters such as oxygen levels, pH, temperature, and cell density. Recombinant protein expression is a primary use for CHO cells, leading to the development of many protocols and reagents intended for DNA transfection. The combination of CHO cells' high tolerances to environmental parameters and commonly used transfection protocols provides a research opportunity to explore the mechanisms by which DNA can be transferred into these cells.This project explores the efficacy of transient transfections into a CHO-K1 cell line utilizing calcium phosphate and liposome-based protocols. The quantitation of the efficiency of each transfection method is determined by utilizing gWIZ-GFP expression plasmid. The growth rates of parental and transfected cells are first determined to time a desirable window for transfection. Fluorescence microscopy is used to illustrate transfection efficiencies. Data analysis of these two methods will provide insight into the best mode of transfection for future research as well as the possible development of a classroom laboratory experience.

Plummer, Taiyana

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Taiyana Plummer

Abstract Name: The Importance of African American Vernacular English

Higher education that studies American literature and American writers tends to exclude African American individuals from the praise, acknowledgment, and conversations surrounding important and transformative American literature– this is especially true for people using African American Vernacular English "AAVE". African Americans and their speech are often purposely excluded and viewed as invalid and unimportant on a large scale, particularly in the conversations surrounding notable and crucial American literature that is continuously taught and celebrated as groundbreaking and transformative. This paper, while anchored in the work of Danez Smith, will explore how African Americans counter this exclusion by purposely using aspects of their culture and AAVE proudly in their work. This self-appreciative work of African Americans isn't new, writers and poets such as Langston Hughes during the Harlem renaissance encouraged African Americans to be proud of their culture and speech, discouraging them to assimilate into social expectations. While examining writers from the past to now, I will look at how there is an understood goal and bridge between many African American writers regardless of time or location. The goal to be unapologetically and proudly African American. And to be specifically African American, an ethnicity and culture that is often diminished and invalidated in the larger conversations surrounding identity. AAVE is traced through their work, purposely being unexplained to those who do not understand. This reinforces their desired audience while simultaneously validating and acknowledging their own culture and speech. By exploring the importance of African American Vernacular English one is able to see the individuality, creativity, and intelligence in writing that otherwise would be overlooked because of the way someone writes or communicates.

Podolin, Danielle

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Danielle Podolin

Abstract Name: Improvement of Trauma-Informed Care for Women with MRKH Syndrome

Mayer-Rokitansky-Küster-Hauser Syndrome (MRKH) is a congenital disorder among biological females that is characterized by the absence or underdevelopment of the uterus, vagina, and cervix (Laggari et al., 2009). For most women, diagnosis does not occur until adolescence, most commonly in response to concern for not beginning to menstruate. This diagnosis can be disheartening for many women who have anticipated bearing children at some point in their life, because that is nearly unattainable with MRKH. Though this syndrome affects approximately one in 4,500 women, the research is scarce, and most have never heard of it before, including medical professionals (Morcel et al., 2007). It is not an uncommon experience within the MRKH community to be forced to explain what MRKH is when meeting with a medical professional. This and related experiences in the healthcare setting can be retraumatizing and can lead to healthcare avoidance. The current study investigates the relationship between negative experiences within healthcare settings and subsequent healthcare avoidance. I tested three hypotheses, (1) people with MRKH experience retraumatization at healthcare appointments, (2) this retraumatization is a universal experience, not limited to the United States' healthcare system, and (3) people with MRKH experience more healthcare avoidance than the general population. A sample of 163 participants responded to an online survey. Within this survey, participants named the psychological triggers associated with their diagnosis, rated the emotional impact of given scenarios related to the healthcare system, and reported their levels of doctor avoidance. Results highlight the ongoing psychological impact of an MRKH diagnosis by demonstrating the relationship between interpersonal interactions during medical appointments and subsequent healthcare avoidance.

Polen, Breanna

Institution: *TN - University of Tennessee at Knoxville*

Discipline: Public Health

Author/Contributors:
Breanna Polen,
Doris D'Souza

Abstract Name: **Listeria monocytogenes: Survival of the Fittest**

Listeria monocytogenesis a foodborne bacterial pathogen that grows well at refrigeration temperatures. To determine survival for risk assessment and inactivation approaches, non-pathogenicL. innocuaM1 is used as a surrogate.The objective of this study was to determine the survival ofL. monocytogenes4b andL. innocuaM1 under soiled conditions at two temperature and humidity conditions.Dust particles containing these bacteria were inoculated on stainless steel coupons (to mimic food industry surfaces) and stored at room temperature or at refrigeration over 0 to 10 days. Bacteria were recovered after serially diluting ten-fold and surface spread plating on Tryptic Soy Agar plates. Each experiment was plated in duplicate and replicated thrice.L. monocytogenesat room temperature and 52% relative humidity (RH) showed recovery of 7.06±0.38 log CFU/coupon at day 0 and 3.97±0.72 log CFU/coupon after 10 days(~3.09 log reduction), whileL. innoculashowed recovery of 6.37±0.45 log CFU/coupon at 0 days and 3.42±0.23 log CFU/coupon at 10 days (~2.95 log reduction).L. monocytogenesat refrigeration and higher 83% RH showed recovery of 7.13±0.29 log CFU/coupon at 0 days and 7.0±0.58 log CFU/coupon after 10 days (~0.13 log reduction), whileL. innocuarecovered was 6.69±0.79 log CFU/coupon at 0 days and 5.87±0.21 log CFU/coupon after 10 days (~0.82 log reduction).Overall, both bacteria showed higher ability to survive at low temperature and high humidity. Low temperature, high humidity and dust particulates that trap microorganisms play key roles in survival ofL. monocytogenesand ability to transfer to foods.

Pollard, Dylan

Institution: *AL - Auburn University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Dylan Pollard,
Yasemin Basdogan,
Zhen-Gang Wang

Abstract Name: **Machine Learning Guided Investigation of Polymers for CO2 Separation**

Membrane separation is significantly more environmentally friendly and energy-efficient than other carbon capture methods; however, it has been found empirically that polymer properties are often negatively correlated and limited by the Robeson upper bound. Our objective is to efficiently find new polymers with competing properties past this bound, which can be effectively implemented with a machine learning (ML) approach. Polymer properties are predicted via regression analysis on data from literature and are then fed into a genetic algorithm (GA) as a property prediction function (PPF). The GA cycles through the following: 1) fragmented polymer strings are converted to fingerprints and fed to the PPF, 2) fragments are scored based on a fitness function, and 3) the fragments are combined, crossed over, and mutated. The GA is functional, and promising polymers have been predicted past the upper bound with realistic predicted property values. The most common functional groups discovered among the best-fitted polymers are pyridine-3,5-diyl and the combinations of arenes and azaarenes. Our current work involves algorithm tweaking and data collection optimization, and in the future we hope to experimentally test and/or simulate the properties of the most promising predicted polymers.

Pollard, Emily

Institution: *CT - Eastern Connecticut State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Emily Pollard

Abstract Name: **Effects of Olfactory Stimulation on Short- and Long-Term Memory of Vocabulary**

Scent has long been used as a strategy to improve memory for tested material due to the state dependence of memory. The purpose of this experiment was to examine how peppermint and rosemary odors affect participants' ability to recall and recognize a list of words. It was hypothesized that memory performance would be better after a short delay than a long one, which was found to be significantly supported for recall and recognition. It was also hypothesized that odors would increase memory performance for both time frames compared to no odor, which was not supported for recall or recognition. It was also believed that peppermint odor would have a stronger effect on memory than rosemary odor, which was also not supported for recall or recognition. Participants studied a list of terms and were first tested on recall and then on recognition from a word bank while exposed to a scent-free environment and peppermint scent environment, or a scent-free environment and a rosemary scent environment. They were called back to repeat the vocabulary tests two days later to examine their long-term retention.Investigating the role that odors play in the different forms of memory can evaluate the use of scents as a study aid in educational settings. This was the first known study to compare the effectiveness of peppermint versus rosemary as stimulating odors.Keywords: recall, recognition, memory, olfactory stimulation, aromatherapy

Pollock, Emylee

Institution: *NC - Western Carolina University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Emylee Pollock

Abstract Name: **Analysis of human decomposition odor using Gas Chromatography Mass Spectrometry**

After death, the human body almost immediately begins to decompose. As tissues begin to breakdown within the vessel, putrefaction commences. This is the buildup of various gases within the body, causing it to bloat. These gases are typically called volatile organic compounds or VOC's. Different parts of the body such as muscles and organs, release different chemical compounds during the decomposition process. They seep into the soil around the body and float into the air as particulates. In order to collect these compounds, an air pump is used with charcoal sorbent tubes. The pump is placed next to a body at Western Carolina University's FOREST (Forensic Osteology Research Station) facility, and the air surrounding the body is pulled in through the pump. The air pump is set to 4.00 L/minute for 30 minutes. Once collected, the charcoal tube is taken to the laboratory and extracted with 2 mL of diethyl ether. After extraction for around 12 hours, the remnants are filtered into a vial and analyzed using GCMS (Gas chromatography- mass spectrometry). In the interest of finding comparable results, a cadaver pseudo scent is also needed. The pseudo scent is broken and placed into a weigh boat and then into a flow cell where it is sealed. The same procedure using the air pump and charcoal tube is followed. It is then analyzed using GCMS where it produced quite similar results to the many chromatograms that were found from previous air samples. Some of the compounds found in both the pseudo scent chromatogram and air sample chromatograms were heptane, dodecane, hexane and many other long carbon chains.

Poltrock, Jesse

Institution: *WI - University of Wisconsin-Stout*

Discipline: Chemistry/Materials Science

Author/Contributors:
Tyler Luke,
Jesse Poltrock,
Jonathan Frisch

Abstract Name: **Oxidative Reactivity of Biomimetic Nonheme Diiron(III)-Peroxide Compounds**

Diiron(II) compounds of the anion of the dinucleating ligand N-EtHPTB (N, N, N′, N′-tetrakis(2-benzimidazolylmethyl)-2-hydroxy-1,3-diaminopropane) and the bridging anion (O2X) of either HO2PPh2, HO2PMe2, or HO2AsMe2 were synthesized. Upon reaction with O2 in MeCN at -40° C, these compounds form metastable O2 adducts previously described as (mu-eta1:eta1-peroxo)diiron(III) complexes with 1,3-O2X bridges. When warmed to -30° C, the O2PPh2-bridged peroxo complex irreversibly converts to a peroxo complex with the O2PPh2 moiety in a terminal position on one iron. The same effect can be produced by adding OPPh3 to the O2PMe2-bridged complex. The oxidative capabilities of these different peroxo species are compared with each other by reaction with various substrates. The effects of bridging O2X versus non-bridging O2X ligands are discussed, as well as the effects of electronic differences in the O2X ligands and the effects of coordinated OPPh3.

Ponce, Kye

Institution: *CA - University of California - Merced*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Kye Ponce

Abstract Name: **How Slavery and Racism are embedded in the Carceral System**

This Comparative Analysis is a comprehensive and analytical research project reflecting on facets of everyday life in the Justice System and the inmates of the United States. This project will go in-depth as to how there is a great disparity in how the mediatization of imprisonment in documentaries shows one story and the reality of what the former inmates experienced in their written autobiographies and bibliographies. This shows us how racism affects the systemic treatment and resources that the inmates and former occupants receive and how that also profoundly affects the community around them for the lack of them. It is a deeply investigative outlook on the experience within structures of incarceration, including placement, treatment, and structural inequality, and questioning the development of the prison system across the United States. Given the meager local and national documentation of the most vulnerable in the U.S., through this project, the aims are to bring together approaches from critical media studies to advance media that portrays the histories embedded across America, thus promoting the vital need for equity and justice among confined communities. This work charts a community often ignored with neglect in the carceral system.

Poole, Cassandra

Institution: *VA - Longwood University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Cassandra Poole

Abstract Name: **The Effect of Bisphenol A (BPA) Substitutes on CD4+ T Cell Immunity**

CD4+ helper T cells are an important immune system cell. One key factor in the mediation of the immune system in general, and T cells in particular, is the female sex hormone estrogen. Abnormal estrogen levels are associated with a variety of conditions, including autoimmune diseases, and several types of cancer, including breast cancer. BPA is a well known estrogen mimicking compound, used in the manufacturing of plastics, epoxy resins, and polystyrenes. As the negative effects of BPA are becoming known, many BPA substitutes have been developed. While the effect of estrogen on T cells is well known, the effect of estrogen mimics like BPA is less certain. The aim of this research is to determine if BPA substitutes affect the differentiation and function of CD4+ T cells, and if they behave like estrogen in the body, to assess the safety of commonly used BPA substitutes. Murine CD4+ T cells were stimulated to encourage differentiation into T cell subsets Th1, Th2, Th17, and Treg. T cells were cultured with BPA substitutes BPAF, BPS, TMBPF, BHPF, and DD-70, as well as BPA, estrogen, media, and DMSO, for comparison and control. Cell viability and proliferation were not affected by treatment with BPA substitutes. ELISAs were performed in order to assess cytokine secretion. In proinflammatory Th1 and Th17 cells, BPA, BPAF and BPS were found to suppress cytokine secretion in a similar manner to estrogen. TMBPF, BHPF, and DD-70 did not affect cytokine secretion. In anti-inflammatory Th2 and Treg cells, BPA, BPAF, and BPS were found to increase cytokine secretion on a similar level to estrogen. TMBPF, BHPF, and DD-70 were found to slightly reduce cytokine secretion. This suggests that while BPAF and BPS are poor choices as substitutes for BPA, TMBPF, BHPF, or DD-70 may be safer, though certainly not perfect, substitutes.

Poole, Phoenix

Institution: *MI - Michigan State University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Phoenix Poole

Abstract Name: **The Case for Gross Art**

Mainstream art has, for centuries, been described as beautiful. These pieces are designed to make you feel good, however, art that is beautiful does not capture the breadth of human experiences and work that does not conform to the cultural “good” is often thrown to the side. There should be space on the mainstream stage of art that reflects the darker side of humanity. I argue that gross and disgusting art has value as it allows artists to show a side of the human experience that most try to hide. Reconciling with the harsher parts of the human experience can give us a more well-rounded view of life. Showing disgusting aspects of life can even be validating for people, especially those who must deal with that aspect on a daily basis. If enough gross art is produced it can destigmatize things like addiction, animal testing, and mental health problems making these things much more normal.

I propose an art piece consisting of a sculpture of a pig’s heart with quotes from Edgar Allen Poe’s “The Tell-Tale Heart” written on it displayed within a gallery. A sculpture of a pig’s heart is chosen for its anatomical similarity to a human heart. Additionally, a pig’s heart is chosen for David Bennett, the late recipient of a genetically modified pig heart in January of 2022, who survived for two only months after the transplant. “The Tell-Tale Heart” is chosen to harken back to more traditional art, although it will be carved into the heart and accentuated with paint simulating blood. The piece will be presented in a glass enclosure on top of a small pedestal.

Popoola, Tiolulope

Institution: *GA - University of Georgia*

Discipline: Public Health

Author/Contributors:
Sina Gallo,
Yu-Chen (Jenny) Lin,
Tiolulope Popoola

Abstract Name: **"What Children Eat": Children's Dietary Recall Accuracy by Quantification Type**

Background: 18% of children in the state of Georgia are classified as obese. Assessing children's diets could share information on childhood obesity prevention and treatment. Obtaining the 24-hour dietary analysis from a child is particularly difficult due to children not displaying proper developmental and cognitive maturity levels. While information could be gathered by proxy from parents and guardians, only a limited amount of data can be collected as parents cannot account for what their child eats outside the home. Purpose: This study aims to understand if a child's meal recall accuracy, overall and by meal component, differs between those interviewed via quantified vs. non-quantified methodology. Methods Students at a summer camp serving the whole state of Georgia were selected to participate based on what BMI category they fall in (Normal or High). We observed them at meal time and, after 24 hours, interviewed them using a quantified or non-quantified method to recall what they ate at the last meal time to the best of their ability. Conclusion: The results noted participants interviewed via the Non-Quantified method have an Overall higher percentage of foods reported as Omissions and Intrusions. Among food groups, quantified interviewees had a more significant rate of intrusions from the dessert food group and a high number of omissions from the vegetable food group. Non-quantified interviewees reported a larger percentage of Beverages as intrusions and Desserts as omissions. This study concludes that delivering interviews using a quantified methodology provides better insight into what children eat.

Popov, Maxim

Institution: *IA - Iowa State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Maxim Popov

Abstract Name: **Feasibility Checking for Intersection-tree Construction: Design, Implementation, and Evaluation**

The Intersection-tree makes it possible for highly efficient processing of rank-aware queries such as top k, rank, and kNN queries. The tree, unfortunately, is computation-intensive to build. A major computation cost is feasibility checking, i.e., given a domain space S and a pair of functions fi(X) and fj(X), checking if the intersection of the function pair fi(X) = fj(X) partitions S into two parts. The current solution applies the standard Simplex algorithm to compute the maximum and minimum values of F(X) in S. If the maximum is positive and the minimum is negative, the intersection indeed partitions S; otherwise, it does not. In this work, we argue that this is not necessary. For feasibility checking, all we need is to find out if there exist two inputs, X and X', in S such that fi(X) > fj(X) and fi(X') < fj(X'). Accordingly, we develop a new algorithm, referred to as Sign-changing Simplex, that searches toward the respective extremum and terminates the search as soon as the sign changes. We implement the algorithm and evaluate the performance with experimental settings. Our expensive evaluation shows that the new approach incurs significantly less computation overhead than the original one.

Posada, David

Institution: *GA - Kennesaw State University*

Discipline: English/Linguistics

Author/Contributors:
David Posada

Abstract Name: **Trilingual families in the U.S. voice their experiences: Examining literacy practices and reviewing cognitive benefits**

Trilingual literacy practices in the United States have not been widely researched. It is hypothesized that there is a growing crisis in the field of humanities due to the failing efforts to promote language maintenance, diversity, and language rights. Families still live in the multilingual world of vanishing languages as many languages are dying, while many others are being marginalized (Skutnabb- Kangas et al., 2009). Additionally, when evaluating the benefits of trilingualism, most of the ongoing conversation has largely concentrated on theories of subtractive and additive bilingualism, which have recently been identified as inadequate to explain the complexity of a three-language development.The proposed research has two main foci: (a) to qualitatively examine empirical interview data of trilingual families in the U.S. to uncover complex language practices, and (b) to conduct a literature review to report the evidence of the effects on executive functions (EF) in trilingual children. Using a case study methodology, a group of themes will be identified from a pool of three virtual interviews conducted in 2022 in which parents voice their experiences of raising their children in a trilingual household while in the United States. Additionally, several databases will be accessed such as PubMed, Web of Science, and PsychINFO. Keyword generation will include executive functions, cognition, trilingualism, neuroplasticity, and protective factor.Preliminary findings suggest that children tend to lack a cultural context to both heritage languages when learning them in a monolingual society, which places many challenges when developing a clear self-image and identity. This research aims to uncover complex language practices that different trilingual groups in the United States experience as they are adversely affected by language marginalization and social injustice related to language differences. The goal is to help craft empowering linguistic identities that can help them develop trilingual competence in the US.

Potocko, Katie

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Katherine Potocko,
Connor Thepsimuang,
Josiah Walker

Abstract Name: **Investigation of the Effect of Nozzle Temperature on Tensile Strength of Reinforced and Nonreinforced Polypropylene in Fused Filament Fabrication Process**

Fused filament fabrication (FFF), a popular 3D printing method, is increasingly being used to create parts for service rather than simply for form prototypes. A primary advantage of FFF is the short lead time from design to realization of a part; this allows third-party users to quickly make parts for repairs. Commercially available filaments are made of a range of materials, including unreinforced or “neat” polypropylene, bead-reinforced polypropylene, and fiber-reinforced polypropylene. While manufacturers of filament rolls typically provide preferred printer settings (including nozzle temperature) it is valuable to understand the effect of nozzle temperature variation on part strength as well as the tradeoffs incurred with the usage of different polypropylene variants. Furthermore, the most readily available strength data refers to material that has not undergone the FFF process. Having specific information on the tensile strength of polypropylene variants subject to a range of manufacturing conditions will provide valuable design information for those who intend to create service parts from polypropylene via the FFF process.

Potts, Hannah

Institution: *TN - Belmont University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Hannah Potts *Kathryn Cooke* *Jordyn Wilcox*

Abstract Name: **Examining the Role of Excess Vitamin D and the Dopaminergic System in the Manifestation of ADHD-like Behaviors in Rats**

Vitamin D is an essential nutrient for many biological processes. Some neurodevelopmental disorders are associated with Vitamin D deficiencies, such as attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). There is an overall lack of knowledge in how total systemic Vitamin D levels affect behavior. The current study investigated the role that excess Vitamin D has in the manifestation of ADHD-like behaviors when the dopaminergic system is disrupted pharmacologically. Rats with elevated levels of Vitamin D will exhibit more hyperactive, ADHD-like behaviors in the open field and nest building tasks than rats with normal Vitamin D levels after receiving the DAT inhibitor, GBR 12909. Twenty-two rats (equal number males and females; 5-7 weeks old) received an oral treatment of either acute high doses of Vitamin D (2 mg/kg) or corn oil and either an intraperitoneal (IP) injection of saline or GBR12909, yielding four treatment groups. Each rat underwent testing in an open field, social preference, marble burying, and nest building tasks, with open field and nest building task data evaluated for ADHD-like behaviors. In the open field activity task, rats that received Vitamin D trended towards increased activity, indicated by greater distance travelled compared to control rats, but this was not statistically significant with the current power. In the nest building task, quality of nest (score of 0-3) showed no differences among treatment groups. There was a significant interaction between treatment groups and food consumed overnight during the nest building task with the Vitamin D group eating less than the control group. The overall behavioral results are trending towards significance in the predicted direction and further testing with additional rats should be considered. Additional molecular techniques will be used to measure the total vitamin D and dopamine levels in the brains of these rats.

Prabhushankar, Prerana

Institution: *NC - North Carolina State University*

Discipline: Public Health

Author/Contributors:
Prerana Prabhushankar

Abstract Name: **Development of a Coffee-Based Toothpaste to Inhibit the Growth of Cavity-Promoting Strep mutans on Model Tooth Structures**

A previous study has shown that the antibacterial activity in Coffee canephora (C. canephora) extract is effective in reducing Strepmutans (S. mutans), the main bacteria to cause dental caries. This study showed that bactericidal effects on S. mutans were greatest with light roast C. canephora extract at 16% and 20% concentrations. The study showed a 4-log reduction of S. mutans compared to the control group in 3 hours, demonstrating that C. canephora is effective against S. mutans. However, this study reported that the plaque-fighting benefits of C. canephora are only available in black coffee, without the added cream and sugar that many coffee lovers enjoy. Toothpaste is used by people every day and provides an alternative method for C. canephora to interact with S. mutans. In order to help consumers reap the potential dental benefits of coffee in an alternative manner, would it be possible to include a C. canephora extract in toothpaste?My project focuses on growingS. mutansbiofilm in a lab setting and applying light roast coffee (at three different concentrations), green coffee, and chlorhexidinetreatments to the biofilm. After observing the preliminary effects of each of the treatments onS. mutans, the application of treatments will be repeated, but this time onS. mutans-coated hydroxyapatite tablets. Teeth are composed of hydroxyapatite, so these tablets will act as simulated teeth. The light roast treatment and concentration that is most effective at inhibitingS. mutanswill be put into a base toothpaste. This toothpaste will be applied to model teeth and compared to commercial fluoride and fluoride-free toothpaste to see if it is effective as another natural, plaque-preventing toothpaste.It is commonlymisconceivedthat coffee causes tooth decay, and the results of this study could assist in disproving this misconception.

Pradeep, Shrey

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Navaneeth Shibu,
Shrey Pradeep,
Mike Sloane

Abstract Name: When is race a useful variable in research?

The use of race or ethnicity as a variable in social science and biomedical science research has had a long and tortured history. The history of social science research is replete with studies examining race as a variable. The issue of race and IQ is a notorious example where research has been coopted to support racial stereotypes, structural racism, and policies driven by majority groups. Genetic and biomedical research have not been immune from similar abuses and misuses. Given more advanced understanding of the complexity of social issues that include disparities and injustices as well as advances in personalized genomic medicine it is useful to pause to examine under what circumstances should race or ethnicity be included as a variable in modern scientific research. Given the preponderance of biased media, increased levels of intolerance and racial bigotry, and the polarization of attitudes on most issues related to inequalities and disparities, one has to ask what are the responsibilities of researchers to incorporate race or ethnicity as a variable and what additional constraints might they consider in how such information is reported? The implications for using race or ethnicity in the social and behavioral sciences will be compared to the implications for its use in biomedical sciences and health-related research.

Pratt, Caroline

Institution: ***WI - Carthage College***

Discipline: English/Linguistics

Author/Contributors:
Caroline Pratt

Abstract Name: The (In) Expressibility of Pain

Since its publication, scholars have examined what appears to be every angle of pain in Virginia Woolf's novel Mrs. Dalloway - except for what would appear to be the obvious: the invisible pain that Woolf's characters such as Clarissa and Septimus suffer from. In her novel The Body in Pain, Elaine Scarry claims that pain is inexpressible, and to some extent that appears to be true in Woolf's writing, as the characters never express their pain directly, and yet I argue that Woolf also appears to have found a loophole to Scarry's argument, as her characters express their invisible pain through their actions, through objects, and through usage of the setting around them. This essay examines both Scarry's and Woolf's views on the expression of pain, how pain is expressed - or not expressed - in Mrs. Dalloway, using scholars such as Christine Froula, who looks at the novel as an elegy; and Karen DeMeester, who shares the true impact of trauma. Using these scholars and many more, we come to the conclusion that pain is not inexpressible, it is just hard to communicate and the person you are trying to express it to must be willing to see your pain, something that matters even today as people deal with invisible pain such as anxiety, depression, grief, and pain and mental illnesses much worse.

Prejean, Abigail

Institution: *VA - Liberty University*

Discipline: English/Linguistics

Author/Contributors:
Abigail Prejean

Abstract Name: **A Revised Typology of the Greek Middle Voice: A Case Study in the Septuagint of Esther**

While most native English speakers understand the active voice ("the chef cooked pasta") and the passive voice ("the pasta was cooked by the chef"), most are unfamiliar with the middle voice. The middle voice ("the pasta cooks") describes a sentence where the subject is neither fully the agent nor the patient. This voice, though rare in English, is common amongst world languages. Of a sample containing over 400 languages (Mattiola 2020), Inglese (2022) found that 105 contain middle markers. One of these, Ancient Greek, prominently features the middle voice. Yet Greek grammarians have only recently turned to linguistics to determine the functions of these verbs. Since Allen's (2003) work on the middle voice, most Greek scholars have utilized Kemmer's (1993) typological framework because it stands as the most comprehensive study of the middle voice cross-linguistically. Despite her contributions, her typology contains too many categoriesand over-emphasizes semantic domains thereby failing to provide criteria for identifying middle markers cross-linguistically. This has led Inglese (2022) to propose a middle voice typology that divides into two major categories: oppositional and non-oppositional middles, with specific subcategories. This paper will fuse Inglese's middle voice typology with Aubrey's (2016) work on middle voice morphology in Koine Greek, making this the first application of Inglese's typology in any language. This typology will be applied to the Septuagint of Esther by providing an analysis of its middle verbs and their functions. The book of Esther allows for a broader study of the Koine period than the New Testament affords. The Septuagint of Esther was written early in the Koine period, prior to the New Testament, and it contains six apocryphal additions. Two of these additions are stylized Greek compositions with a higher volume of middles (Domazakis 2021), making this case study a fruitful inquiry of the middle voice.

Presler, Sydney

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Maria Cruciani,
Sydney Presler

Abstract Name: **Analysis of the Parameter Space for a Discrete Analog of the Lotka-Volterra System Using the Framework of the Time Scale Calculus**

We are working on generalizing the Lotka-Volterra system of differential equations. This system of equations is commonly used to model predator-prey relationships. We are using the framework of the time scale calculus to discretize these differential equations and analyze solution behavior for a set of parameters. In our investigation, we are performing phase plane analysis and inspecting the lack of uniqueness in solution behavior. Our goal for this study is to find necessary and sufficient conditions on the parameters that yield various types of solution behavior. We also seek to determine long-term behavior for any initial condition.The time scale calculus is a framework that is used to extend and unify discrete and continuous analysis. It is often used to connect differential equations (where solutions have a domain in the real numbers—continuous) with difference equations (where solutions have a domain in the integers—discrete). The time scale calculus also allows for solving dynamic equations on other domains as well, which leads to results that do not have a direct analog in either differential or difference equations.

Prestholdt, Carissa

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Business**

Author/Contributors:
Carissa Prestholdt *Lindsey Creapeau*

Abstract Name: **Measuring the Impact of a Dementia Simulation with Health Care Administration Students**

Problem: Worldwide, there are 50 million people living with dementia and with no treatment available as a cure for dementia, the impaired ability has been recognized as a priority for public health. Because caregivers spend so much time providing care, they may also receive detrimental effects on their psychosocial and physical health. This project focuses on identifying the effects on conducting a dementia simulation in pre-professional student training. Rationale Studies conducted on nursing students showed promising results of increased empathy and learning outcomes after completing a virtual simulation. Research on the effects of dementia simulation conducted on health care administration students has not been done. Results will determine the importance of implementing a hands-on learning experience in the training of health care administration students. Methodology: 34 students were brought into a PREP Room where they received instructions, simulation gear, and pre-simulation survey. Then students were led into a classroom in groups of 4 and completed a dementia live simulation. Once the simulation was completed, the researcher led students back to the PREP Room where students took off gear and filled out a post simulation survey. Responses from pre- and post-simulation questionnaires were collected and compiled into a single dataset to be analyzed . Results: The data collected is currently being analyzed by comparing results from pre- and post- simulation questionnaire results. Analysis of students' empathy and compassion for people with dementia will determine effectiveness of implementing virtual simulation into health care administration programs. Conclusion: If experiencing a virtual simulation of what it is like from the perspective of someone with dementia enhances learning outcomes for pre-professional students, there can be improved training provided for students who will eventually provide care for patients, thus, advancing towards better caregiving.

Preu, Ethan

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Ethan Preu,
Mark Jackson,
Nazim Choudhury

Abstract Name: **Perception vs. Reality: Understanding and Evaluating the Impact of Image Deepfakes over College Students**

Artificial Intelligence (AI)-powered Deepfakes are responsible for new challenges in consumers' visual experience, and pose a wide range of negative conse- quences (i.e., non-consensual intimate imagery, political dis/misinformation, financial fraud, and cybersecurity is- sues) for individuals, societies, and organizations. Research suggested legislation, corporate policies, anti-Deepfake tech- nology, education, and training to combat Deepfakes in-cluding the usage of synthetic media to raise awareness so that people can become more critical in detection when evaluating these contents in the future. To educate and raise awareness among the college-going students, this pilot survey study utilized both synthetic and real images over undergraduate students (N=19) to understand the human cognition and perception demonstrated by the literate pop- ulation in detecting Deepfake media with their bare eyes. The results showed that human cognition and perception are insufficient in detecting synthetic media with their inexperienced eyes and even the intelligent population is vulnerable to this technology. While Deepfakes are becoming sophisticated and imperceptible, it was observed that this kind of survey study can be beneficial in raising awareness among the population about the societal impact of the technology and may also improve their detection ability for future encounters.

Prickett, Sandra

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sandra Prickett,
Michael Walsh

Abstract Name: Does Monotropa uniflora Produce Grayanotoxin?

Finding new pain management therapies is important to mitigate the effect addictive opioids have on our society. One folk medicine that shows promise as a pain management tool is Monotropa uniflora. M. uniflora is a member of the Ericaceae family of plants, many of which produce a neurotoxin called grayanotoxin (GTX). The primary purpose of the experiment is to determine if the alcohol extract of M. uniflora effects MCF-7 cells in the same way as other Ericaceae family plants that produce GTX. Previous studies concerning M. uniflora were studying anti-microbial activity of the ethanol extract, among other solvents. The physiological effects of M. uniflora extract on human cell culture have largely been unexplored in western literature. By studying the dosage effect of the ethanol extract in human breast cancer (MCF-7) cells, the activity of M. uniflora extract can begin to be characterized via Raman spectroscopy. Preliminary findings suggest that the M. uniflora ethanol extract effects the MCF-7 cells independently of the ethanol solvent. Additional analysis is continuing to expand effects across time to determine if the cells are metabolizing the extract and solvent differently. Comparing Raman characterization between M. uniflora extract with characterization of GTX in MCF-7 cells will give further evidence to determine whether M. uniflora produces GTX and lend to future research determining if either are safe alternatives to opioid painkillers.

Priem, Morgan

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Morgan Priem,
Dan Grilley

Abstract Name: Determining the Effects of Poly-A Tracts and Monovalent Cations on Nucleosome Unwrapping Equilibrium

Nucleosomes, composed of 147 base pairs of DNA wrapped around an octamer of histone proteins, play a role in gene regulation and cellular function by controlling access to the genetic information stored within DNA. The placement and movement of nucleosomes along strands of DNA is determined, in part, by the presence of homopolymeric stretches of deoxyadenosine nucleotides on one strand of double stranded DNA, commonly referred to as poly-A tracts, which are overabundant in eukaryotic genomes. The poly-A tracts exclude nucleosomes in a manner that depends upon the purity and length of the A-tract. We have previously shown that A-tracts adopt unique structures that are preferentially stabilized by specific monovalent cations. The exclusion of nucleosomes by these long A-tracts, greater than 15 base pairs, impacts the accessibility of nearby DNA. The equilibrium accessibility of DNA within the nucleosomes, determined by unwrapping and rewrapping rates, is also an important factor in regulating DNA dependent processes. The impact of short A-tracts, 6-8 base pairs, on nucleosome dynamics is poorly understood. Using competitive reconstitution and equilibrium FRET measurements in the presence of different monovalent cations, we have investigated how the length and placement of short A-tracts within the nucleosome affects the formation and equilibrium accessibility of the nucleosomes. We demonstrate that the same cations that stabilize the unique A-tract structure exacerbate the effects of A-tracts on nucleosome stability and equilibrium accessibility.

Prim, Connor

Institution: *TN - Middle Tennessee State University*

Discipline: **Music**

Author/Contributors:
Connor Prim

Abstract Name: **Musicianship Explored Through Mahler's Fifth Symphony**

Gustav Mahler's Symphony No. 5 represents one of the pinnacle orchestral works of the Romantic Era. In addition to its physically and emotionally demanding passages, it beautifully expresses the beauty, heartache, and pain Mahler experienced throughout his life. Therefore, when performing his music, musicians must be careful to understand the grief that was Mahler's muse and the solace he found in music. This thesis project aims to aid trumpet players in their understanding of the piece and its composer and assist in developing the technical and musical abilities necessary to perform this magnificent work. Description and Instrumentation: This thesis takes the form of a suite of solo trumpet and small trumpet ensemble pieces that are based on each movement of the fifth symphony. The first, second, and fourth require solo trumpet, the fifth is a duet, and the third is a trio.

Prins, Emily

Institution: *NC - Elon University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Emily Prins

Abstract Name: **Trauma and Transparency in True Crime Documentary Filmmaking**

In February 1981, 14-year-old Deanie Peters left her brother's wrestling match to use the bathroom and was never seen again. The cold case left the Michigan town of Grand Rapids shaken, and decades later residents still hope for justice. This story has been turned into ashort documentary film titled Not Without a Trace, which aims to capture how the Deanie Peterscase has affected the community. Throughout all aspects of production, relevant literature and true crime documentaries have been analyzedin order to avoid the ethical pitfalls that plague the growing genre. The research specifically examines how to navigate participant trauma and promote transparency in documentary filmmaking by pulling from sources across the fields of film studies, journalism, and ethical frameworks. This will result in an addendum to the Documentary Accountability Working Group framework for ethics that specifically caters to documentary students, along with a reflective paper that outlines how the ethical guide was used in the production of Not Without a Trace.

Pro, Carolina

Institution: *TX - Laredo College*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Carolina Pro

Abstract Name: **It's our Duty: Cortisol Level in Goldfish Feces and Mucus**

Stress can affect a fish's overall physiological health; environmental stressors can affect a fish's stress levels which may lead to complicated health and wellness. This is important especially for fish hatcheries. Cortisol is a hormone that regulates the body's stress response and can be studied to measure the amount of stress induced on a fish.The fish's first line of defense is the mucus coat. The mucus coat protects the fish against parasites and other invading organisms like bacteria and fungus. In this study, a comparison of stress caused by the different environment, water source, was studied on Carassius auratus, goldfish. The water source was the Rio Grande, tap water with AquaSafe, and a control using bottled Spring Water. Water quality was tested using the Vernier Labquest®2.0 (Beaverton, OR 97005 USA) to determine pH, temperature, and water turbidity. The 5 in 1 API Test Strips for fresh water was used to measure water hardness, nitrates, and nitrites. The average pH were 7.67, 8.125, and 8.2066 for the control, tap water, and Rio grande water, respectively. The control had a hardness of 30 ppm while tap water and Rio Grande hardness was at a consistent 180 ppm. Slime mucus and fecal matter of goldfish were collected to measure the Cortisol level throughout a 15 day period. Since the cortisol melting point is 220℃ and its boiling point is 566.4℃, the plan to use a gas chromatography to quantify the cortisol level in mucus and stool was not reasonable. Future analysis will be done using a Cortisol enzyme-linked immunoassay kit. Information from this research is beneficial in understanding the relationship between stress, cortisol level, and the environment a fish is maintained in.Key words: Stress coat, microbiome, cortisol, water quality, productivity, Rio Grande

Proctor, Evelyn

Institution: *NH - University of New Hampshire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Evelyn Proctor

Abstract Name: **Targeting the ATR pathway in Merkel Cell Carcinoma**

Merkel Cell Carcinoma (MCC) is a rare neuroendocrine skin tumor and the most deadly type of skin cancer currently identified. In the United States, 80% of the cases are caused by the integration of the Merkel cell polyomavirus (MCPyV) in the human genome. The MCPyV ST – EP400 – MYCL complex plays a critical role in this cancer by specifically activating gene expression. The MYC family oncoproteins including MYCL are general amplifiers of RNA production. The increased RNA production may overwhelm the splicing machinery and render MYC-driven cancer cells more dependent on the ATR-Chk1 pathway in order to mitigate RNA-DNA hybrid (R-loop) induced DNA damage and genomic instability. Furthermore, the EP400 histone acetylase complex is also involved in the regulation of DNA damage repair. Here, I use MCC cells that overexpress MYCL and EP400 complex components to investigate the sensitivity of cancer cells to ATR inhibition. I have found that an ATR inhibitor AZD6738 is effective at decreasing MCC cell proliferation. mTOR activation has also been suggested in MCC without extensive study. The PI3K-AKT-mTOR pathway is involved in cancer cell proliferation but is also essential for normal physiology, warranting the search for combinatorial approaches using mTOR inhibitors in cancer treatment. Given that both mTOR and MYC pathways are involved in nutrient sensing and cell proliferation, I tested whether MCC cells are sensitive to mTOR inhibitors in combination with AZD6738. However, the two inhibitors are antagonistic to each other. Further evaluation of the ATR and mTOR pathways in MCC would shed light on future therapies that can be developed for other neuroendocrine tumors or virally induced diseases.

Proefrock, Elaine

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Travis Von Haden *Josiah Johnson* *Jayden Beckley*
J.T. Bogle *Abigail Keenan* *Chase Melton*
Abbey Jacobs *Hannah Elmer* *Elaine Proefrock*

Abstract Name: **Qualitative Study to Identify Factors Related to Job Satisfaction among Early Career K-12 Physical Educators**

It has been reported that 44% of K-12 teachers leave the profession in their first 5 years. Physical education (PE) is among those having difficulties retaining teachers. The purpose of this qualitative study was to explore emerging themes related to job satisfaction and dissatisfaction of early career PE teachers in the Midwest region. Using purposive and convenience sampling, eight early career PE teachers were interviewed over Zoom for 45-60 minutes on their perspectives on factors that would influence job satisfaction or dissatisfaction. Prior to the interviews, participants completed a survey on Qualtrics to obtain demographic information. The interviews were audio-recorded, and researchers transcribed the interview for qualitative analysis. Data were analyzed using categorical aggregation and direct interpretation. Researchers triangulated to ensure data trustworthiness. Five primary themes surrounding job satisfaction included: 1) relationships with administrators, supports, and school demographics, 2) co-worker relations and values, 3) PE teaching external factors (i.e., teacher salary, class sizes, class types, subs,; location of gym/office), 4) student relations and motivations; and 5) teacher attitudes and sense of autonomy.The five major themes resulted in the following suggestions for administrators to possibly increase retention of early career teachers: 1) provide intentional guidance and support; 2) hire PE teachers who are passionate; and 3) provide meaningful professional development opportunities. It is also suggested that PE teachers invest in developing professional relationships with coworkers and students. Future research should quantitatively examine the effectiveness of implementing interventions to improve PE teachers' job satisfaction and the decrease attrition rate.

Proffitt, Gabrielle

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Gabrielle Proffitt,
Megan Best

Abstract Name: **Virtual Stories to Support Undergraduate Students in Developing Cultural Awareness**

The Human Library project is working to connect "human books" (people with unique experiences and backgrounds) to "readers" (people who want to learn and grow) to challenge what they know. Inspired by events held by The Human Library, this research aims to create an opportunity for undergraduate communication sciences and disorders students to grow and learn from those whose backgrounds differ from their own and apply it to their professional development. In this research project, stories will be created and presented online by graduate students, alumni, or other professionals who self-identifyexperiences related to diversity in the field of communication sciences and disorders. These stories will create a virtual library for the undergraduate students enrolled in a senior-level course on serving diverse populations. Undergraduate students will choose to review and analyze a story, generating a shareable presentation for the class and a personal reflection on the experience. To measure the effectiveness of this project on diversifying student cultural perspectives, a survey based on the American Speech-Language-Hearing Association (ASHA) Cultural Competence Check-In: Self-Reflection, will be given to the students before and after the story analysis project. After that, change scores will be calculated for statistical significance. Reflections will be analyzed for general themes to further explain student learning. The results of this study will reveal whether this is an effective pedagogical method for diversifying student perspectives on culture within the scope of communication sciences and disorders.

Propst, Chad

Institution: *PA - Moravian University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Chad Propst,
Godfred Fianu

Abstract Name: **Titanocene(III) Catalyzed Radical Arylation of Diphenyl Amino Epoxides with Electronically Different Substituents**

The reaction being studied is a titanocene(III) catalyzed atom-economical radical arylation of amino epoxides to form indoline derivatives that are basic motifs of common antitumor agents. To maximize the potential of the arylation process, a thorough mechanistic study was carried out and it was determined that the catalyst is stabilized by a salt additive and the turnover-limiting step is the back electron transfer from the radical sigma complex to the pendant titanium metal. To further establish the synthetic scope of this reaction, the regioselectivity of radical addition to diphenyl amino moieties with electronically different substituents on the arene needs to be studied. However, there are no synthetic protocols for synthesizing these epoxides with electronically different substituents on the arene. In this study, diphenyl amino epoxides with electronically different substituents on the arene were synthesized using multiple steps and analyzed using FTIR, NMR, and GC-MS. Future studies will focus on running a titanocene(III) catalyzed arylation reaction with the newly synthesized epoxides, on a Schlenk-line under inert atmosphere, to investigate the regioselectively of radical addition.

Prouty, Julia

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Julia Prouty

Abstract Name: **Three Good Things: Families and The Power of Perception**

A national research study is being conducted to examine family happiness and the power of perception. The measure of happiness in families is predictive in a variety of health outcomes such as emotional and relational well-being, physical health, cognitive functioning, and life longevity. Happiness is seen as a protective factor, having an inverse relationship with depressive symptoms while promoting a better quality of life. Emerging as an adequate theoretical framework, the field of positive psychology has grown since its conception in 1998. Specifically, the field of positive psychology created and follows the 50-10-40 model of happiness, meaning that 50% of our happiness is derived from biological predeterminants (genes), 10% is from our circumstances (e.g., where you live, your job, etc.), and a whopping 40% from your actions or attitude (perceptions; things you can change). Over the last 25 years, the field of positive psychology has grown in general popularity with self-help books, articles, speakers, and workshops, but it is also supported by clinical data and academic rigor. This current study plans to leverage the 40% actions (perception) principle to test the positive psychology approved/created “Three Good Things” (TGT) exercise within a rural and urban American family sample. Other studies have revealed that using the TGT exercise has a positive outcome for alleviating depressive symptoms, enhancing college students’ well-being, and improving marital satisfaction. However, there are limited studies of this scope that strictly focus on the TGT exercise and American families. This mixed-method study intends to analyze the impact of the TGT exercise and find qualitative themes with a rural and urban American family sample through an online survey. The hope is findings from this study can be utilized to inform educators, clinicians, and policymakers as well as provide participants with a free evidence-based intervention.

Prouty, Sophia

Institution: *NY - St. John Fisher College*

Discipline: **Public Health**

Author/Contributors:
Sophia Prouty

Abstract Name: **Redlining and Health in Rochester, NY**

In 1933 the Home Owners' Loan Corporation Act created residential security maps of major cities that outlined mortgage lending risk; ranking neighborhoods as “best, still desirable, declining, and hazardous.” Neighborhoods considered “hazardous” were often redlined by lending institutions by denying them investment resources which worsened their housing and economic opportunities. This discriminatory practice wherein services are withheld from potential customers who reside in neighborhoods classified as hazardous to investment, referred to as redlining, has been a historic problem for the city of Rochester, NY. Most of the hazardous neighborhoods are those where racial and ethnic minorities, as well as low-income residents reside. Creating neighborhood rankings generated segregation between zip codes. This segregation has forged significant differences between territorial lines, especially speaking to health outcomes. Investigating how health outcomes materialize between zip codes is the research question at hand. This research acts as a tool for exploring health disparities produced by redlining practices. Using the social determinants of health as a framework for this research, the literature revealed the variability of economic stability, education, healthcare, neighborhood, built environment, and community context characteristics between the “hazardous” neighborhoods and the “best” neighborhoods. The findings outline clear health disparities when looking through this lens; people who reside within the lower ranked neighborhoods experience poorer health outcomes than those who live in the higher ranked neighborhoods such as. Redlined communities are more susceptible to mental illness, communicable and chronic disease, higher mortality, and lower life expectancy. These disparities have persisted for generations, creating a cycle of discrimination, poverty, and disproportionate health outcomes. A public health program, focusing on safe and affordable housing, is proposed for high-risk communities to mitigate the ill effects of redlining practices. By highlighting these inequalities and proposing this housing program, we strive to combat the larger issue at hand; systemic racism.

Provido, Chris Geo

Institution: *MD - Bowie State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Chris Geo Provido *Jason Abraham* *Onyinye Constance Ihearahu* *George Ude* *Supriyo Ray*

Abstract Name: **Next Generation Sequencing Analysis of miRNA Derived Musa sp.**

As the human population crosses 8 billion in 2022, food security has become a critical concern. Banana (Musa sp.) is a key crop for global food security as it is one of the few fruits that can grow year-round. It is under threat due to various biotic and abiotic stressors; it is imperative that we explore molecular metabolic regulators to develop resistance against the stressors and assist in crop improvement. Non-coding small RNA, especially microRNAs (miRNAs) in plants are known to regulate various metabolic processes in plants and play critical roles during their developmental phase and in responding to stress. Unfortunately, the small RNA library from Musa sp.is poorly explored and non-existent in miRBase, which is the most comprehensive miRNA library for various organisms. In this project, miRNA was extracted from the leaves of theMusa acuminata(AA) Higa cultivar and sequenced using Illumina next generation sequencing (NGS) technique. Raw sequencing data were cleaned and then analyzed with UseGalaxy and sRNAtoolbox to identify target genes, statistically analyze differentially expressed genes, and identify miRNAs unique to the plant. Sequenced miRNA data were annotated using the library of at least 90 plants present in the MirGene database. Data trends from the annotated species displayed high frequencies of mRNA or unmapped reads with a small subset of other RNAs left undefined. Reads were predominantly 17-18 nucleotides long and overall ranged between 15 to 39 nucleotides. The data was curated to analyze miRNAs within 17-25 nucleotides filtering out other non-coding RNA. Quantification of the raw genomic sequencing demonstrated successful hits with hundreds of thousands of reads mapped to mature and precursor miRNAs of various model plant genomes. Further quantitative analysis is underway to compare and contrast the results to the previously annotated miRNA derived fromMusa sp.

Przybylek, Jeffrey

Institution: *VA - James Madison University*

Discipline: **Physics/Astronomy**

Author/Contributors:
Jeffrey Przybylek,
Keigo Fukumura,
Yoshito Haba,
Masaaki Takahashi,
Kyle Britton,
Francesco Tombesi

Abstract Name: **Soft Excess X-Ray Radiation from Black Hole Accretion**

A certain class of luminous galaxies hosting supermassive black holes (BHs) is known to exhibit the so called “soft X-ray excess” in their X-ray spectra. However, its physical identity and origin are yet to be understood. In this work, we systematically study a sample of 9 well-documented narrow-line Seyfert 1 active galactic nuclei (AGNs) by utilizing the archival XMM-Newton/Epic spectra in the context of general relativistic magnetohydrodynamic (GRMHD) model. In this scenario, thermal accretion disk photons (in UV) are Compton up-scattered by nonthermal energetic electrons in the hot downstream accretion due to shock compression, producing the observed soft excess. Our spectral model consists primarily of the shock Comptonization component and the underlying continuum including reflection from the accretion disk. Based on statistics, we successfully constrain the model parameters, most notably electron energy, effective disk blackbody temperature, and inclination angle θ, from which we would be observing the AGN, for a given BH spin. The disk temperature is commonly found to be ~ 10 eV and the electron energy ranges from ~ 75 - 160 keV (for Schwarzschild BHs) to ~ 126 - 232 keV (for Kerr BHs) depending on inclination. Our analyses imply that the characteristics of the observed soft excess are strongly dependent on the properties of the downstream accretion flow and BH spin.

Przytulski, Lydia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biology**

Author/Contributors:
Molly Halverson *Chris Connoy* *Lydia Przytulski*
Chase Fillion *Daina Kalnina* *Kya Meunier*
Zach Rohde *Noah Netzinger* *Evan Weiher*

Abstract Name: **Plant functional community assembly along a stress gradient in Northern and Southern Wisconsin forests**

Functional community assembly seeks to understand communities in terms of mixtures of functional traits. Stabilizing ecological selection can cause communities to have lower than expected trait diversity, while disruptive ecological selection can produce greater than expected trait diversity.Similarly, directional ecological selection can alter mean trait values. Environmental stress (e.g., low soil moisture) can reduce trait diversity, but the evidence is limited. Community assembly may be influenced by the spatial extent of the species pool and the spatial grain size of the sample plot. We sampled plants in 40 locations in Northern forests (mainly evergreen conifers) and Southern forests (mainly deciduous trees) across a strong gradient in soil moisture. Each location had three sample plots with three grain sizes: (0.1m^2, 1.0m^2, 10m^2). Four functional traits (two size traits and two leaf economic traits) were collected for every plant species. We used Monte Carlo simulations to estimate the amount of functional trait diversity and mean trait values that would be found if community assembly was caused by random ecological drift. The simulations used four species pool scales: regional (all observations), within Northern or Southern Wisconsin forests, within specific forest types, and within each forest location.With a large-scale species pool perspective, communities had lower than expected trait diversity, but with small-scale perspectives the pattern switched.Leaf size diversity was greater than expected using the smallest species pool.Moisture had significant effects on both trait means and trait diversities, but the relationships strongly differed in Northern versus Southern forests. Some results supported existing theory, for example dry forests tended to have more conservative leaf traits and also lower trait diversity in some cases. Functional community assembly differed in Northern versus Southern forests, and so there are unique assembly rules for each region.

Puga, Laila

Institution: *AZ - Northern Arizona University*

Discipline: **Sociology**

Author/Contributors:
Laila Puga

Abstract Name: **Covid-19 Vaccine Hesitancy Among Latinas/os in the State of Arizona**

As the Corona Virus mutates, scientists are questioning how to effectively reach all communities and vaccinate the most vulnerable. I will be researching why the Latina/o population within the state of Arizona are hesitant to receive the vaccine and what can be done in order to reassure them to accept the vaccine and how medical racism within the medical system are to blame for the poor vaccination rates affecting the Latina/o population and covid misinformation. The vaccination of all groups is essential to ending the pandemic and preventing more potential mutations.This project will cover the sociological reasoning behind coronavirus vaccine hesitancy seen today among Latinas/os in the state of Arizona. Combining academic concepts on applicable theories to explain the current institutions in place and how they are failing Latina/os. These theories will delve into how the United States medical institutions bred environments for Anglo white Americans to advance medically at the expense of Black and Brown people. As a result of this past history of racist medical abuse, many are left traumatized and untrusting of institutions that had previously advanced at the expense of their lives. It will discuss intersectional issues within the social inequalities seen in the medical institutions of the state of Arizona. Next, this project will examine the findings of mixed method quantitative data on personal experiences and vaccine hesitancy among the Latina/o population focusing on fifty focus surveys and ten exit interviews. Finally, it will reflect on how the results and racist issues within the medical system are to blame for the poor vaccination rates affecting the Latina/o population and covid misinformation.

Puga, Rafael

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Music**

Author/Contributors:
Rafael Puga,
Nick Miskimen

Abstract Name: **Nightcap**

This piece was composed over the past year for a trio consisting of clarinet, alto saxophone, and piano by recent UWEC alum Jack Ford. It was written for clarinetist Rafael Puga and saxophonist Nick Miskemen. Performing new works help move classical music forward by ensuring that fresh perspectives are being heard. It also celebrates the collaboration between composer and performers. The preparation of this piece goes beyond a practice room and rehearsals and requires communication by everyone involved. This piece has an unusual instrumentation as clarinet, saxophone, and piano repertoire is very limited, thus adding more music options for future musicians.

Punjani, Sana

Institution: *GA - Emory University*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Sana Punjani,
Eric Solomon

Abstract Name: **Planned Parenthood: Structural Evolution and Organizational Change**

If the voices silenced by Planned Parenthood could speak, what would they say? To address this question, the paper explores how the organization has continually centered the experiences of white women by placing stipulations on the definition of motherhood. Such definitions rely on models of Victorian domesticity. The work provides a historical analysis of the structures, both figuratively and literally, that the organization has implemented to bolster these ideals. This paper traces said values as they have transitioned out of once blatant white supremacist objectives into practices that have a more insidious effect on non-white women. By employing my first hand accounts, reviewing online reviews from Planned Parenthood patients, and delving into white feminist theory, this piece tells a tale that is wishfully forgotten. The research concludes multiple findings about the experience of women of color at the hands of Planned Parenthood. First, "educational" flyers, among other artifacts, produced by the organization permitted them to violate the reproductive rights of women of color by assuming sexual deviancy. Such an assumption was conversant with racial stereotypes of the era. Consequently, the establishment etched into the foundation of reproductive care the idea that women of color were fungible. This participated in other conversations about the role of said women in simultaneous contexts such as Jim Crow. Specifically, Margaret Sanger's population-control campaigns possessed rhetoric that resembled other problematic narratives about non-white women.By giving voice to the women who surrendered their reproductive rights to a non-profit that upheld white supremacy, society can better meet our moment. We can address our current desire to purify the nation, a desire that has shaped legislation into modern eugenics policy: the reversal of Roe v. Wade.The scholarship contributed to research on the history of Planned Parenthood and its role in current conversations around reproductive justice.

Purnell, Michaela

Institution: *OK - Oklahoma State University*

Discipline: **Biology**

Author/Contributors:
Michaela Purnell,
Caitlin Zimmermann,
Joshua Eldridge,
Jaxson McCullah

Abstract Name: **Shade and Flooding: How does it affect Mirabilis jalapa**

Environmental conditions, such as flooding and shade, have been suggested to have differential responses across species. Our study aimed to identify these favored conditions of the plant species Mirabilis jalapa. The treatments consisted of a combination of either regular watering or flooding, and shade or regular lighting; n=36. Results suggested that overall plant growth was diminished in the flooding treatment groups which included decreased plant height, shoot biomass and stem diameter, as well as significantly fewer leaves per plant. We also found that under the shading treatment group we saw increased plant height, shoot biomass and stem diameter, as well as more leaves per plant. Overall, we concluded that plants in the shading and regular water treatment group displayed increased shoot biomass and number of leaves. This evidence was supported in the study conducted by Raffo et al. who found that the leaf area and internode length increased in rosemary plants. This study may be further continued by shifting the focus to different types of soils including clay and sand as they will retain water differently and therefore interact with our regular watering vs. flooding treatment.

Pursner, Felicia

Institution: *PA - Bryn Mawr College*

Discipline: Mathematics

Author/Contributors:
Felicia Pursner,
Matthew Cowen,
Nate Wilson,
Nolan Dahlman

Abstract Name: **Modeling PCOS (Polycystic Ovarian Syndrome)**

Polycystic ovarian syndrome affects around 10% of women. Our project will expand on the existing mathematical modeling of female ovulation to create a model of abnormal ovulation, specifically looking at polycystic ovarian syndrome (PCOS). We are using mathematical modeling to learn about the real world and using a system of differential equations to study the properties of the mathematical expressions in our model. To do so, we are building on the research of Chen and Ward model and Hendrix model. Through differential and auxiliary equations, we have been able to graph the hormones involved with the menstrual cycle. Drawing a comparison between normal and abnormal ovulation will allow us to address the differences. Though a common treatment for PCOS is birth control pills, this is not the ultimate solution. There is not a definite biological cause of PCOS and not every person shares the same symptoms. Modeling the hormone system for PCOS has allowed us to make discoveries and recommend a different treatment, Metformin, to individuals of various age, race, and health status. This presentation will summarize the results of the CC-REU NSF summer REU experience (DMS-2050692) where these questions were explored.

Putnam, Chaysee

Institution: *WV - West Virginia University*

Discipline: Biology

Author/Contributors:
Chaysee Putnam

Abstract Name: **The Effect of Immunotherapy on the Cardiovascular System**

Background: Target to background ratio of large arteries is an established method to study arterial inflammation. Immunotherapy in patients with cancer is known to induce inflammatory response in the body, and potentially can be detected using target to background ratio. Methods: We reviewed and analyzed 21 positron emission tomography (PET) scans of patients with cancer, both before and after immunotherapy. Values were obtained from the ascending aorta, descending aorta, superior vena cava, and left ventricle, using a method known as radiomics.Results: This study is still currently being conducted, as the data must be analyzed in order to make any further conclusions. The expected results would show stress being relieved on the heart once the cancer has been fully treated. Clinical Implications: This study will greatly influence the way physicians treat cancer patients, as well as help them understand the cardiovascular effect from immunotherapy.

Putzer, Mark

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Biology

Author/Contributors:
Kendal Watwood *Adam Sobieski* *Mark Putzer,*
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Mariah Linse *Oliver Long* *Austin Skenadore,*
Sam Troudt *Catherine Washak* *David Krause*

Abstract Name: **Physiological Changes in Dienococcus aquaticus During Long-Term Stationary Phase Under Carbon Source Availability Stress**

There is a complicated interaction between a bacterium and its environment driving adaptation. Usually, bacterial physiology is studied during the exponential phase, but investigations during the long-term stationary phase are not as well understood. Here, we followed two strains of Deinococcus aquaticus in the long-term stationary phase in low and high-nutrient environments. The evolutionary trajectory was assessed through surveillance of cell viability, colony morphology, genomic content, and protein content over 54 days at three time points. We predicted that nutrient depletion and waste accumulation in the flask environment would result in phenotypic variation. Interestingly, there was an environmental shift toward a basic pH. Despite the shift in pH, cultures remained viable after 54 days. Differences among strains were observed in generation time, pigmentation, and colony morphology, among other phenotypic and metabolic characteristics. Divergence in extracellular protease activity was also observed throughout the study. Significant variation between samples equally subjected to the same growth conditions suggested that D. aquaticusis capable of short-term evolution under resource-scarce conditions.Our findings suggest that further research to evaluate variation in proteins as a carbon source is warranted.

Qiang, Amy

Institution: *KS - University of Kansas*

Discipline: International Studies

Author/Contributors:
Amy Qiang

Abstract Name: **THE IMPACT OF WESTERN FAST FOOD ON BMI IN CHINA**

Beginning in the 1980s, China has increasingly received Western influences over the last few decades, including the establishment and rapid expansion of American fast-food restaurants. This project will analyze the impact of two chains—McDonald's and Kentucky Fried Chicken (KFC)—on weight changes among China's population over a period of two decades. Previous literature used the China Health and Nutrition Survey (CHNS) to track several health factors, including increases in rates of overweight/obesity and body mass index (BMI), as well as changing diets and nutritional status of Chinese residents. Studies have also shown a positive correlation between the presence of Western fast-food restaurants and weight in certain neighborhoods. The data in this project will come from the CHNS, a longitudinal survey which involves the examination of food environments, physical health factors, and diet composition of the included participants, with a specific focus on the Jiangsu province. Data collection will involve mapping the locations of KFC and McDonald's from 1989-2019 in Jiangsu to visualize the development of those restaurants alongside any observed changes in BMI, overweight/obesity, and other health factors. This comparative analysis may reveal a correlation between the prevalence of Western fast-food restaurants and the shifting trends of weight and BMI in China's population. The results will guide future public policy approaches to improve the overall health of the population and to hopefully reduce the rise of non-communicable chronic diseases.

Quandt, Haley

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Haley Quandt,
Yalan Wang

Abstract Name: **Advance in Mortality Modeling and Application to Life Insurance**

Life expectancy has generally increased worldwide: the global life expectancy at birth increased by an average of 6.5 years, from 66.8 years in 2000 to 73.3 years in 2019 (WHO, World Health Statistics 2021: A visual summary1). The longevity risk, from the perspective of an insurance company or a defined contribution plan, is the unexpected probability that individuals will live longer than anticipated and therefore potentially outlive their retirement asset. Improved models for mortality (and therefore life expectancy) forecasting give more accurate estimate of life expectancy and are undoubted steps in mitigating longevity risk.In this project, we first analyze several recent regression-based models for mortality and life expectancy forecasting (such as the Lee-Carter, the Renshaw and Haberman, the Age-Period-Cohort, and the Cairns-Blake-Dowd) using traditional extrapolative fitting techniques, such as principal component analysis, generalized linear models, and time series. In the second part of the project, we use advanced machine learning techniques such as neural network and decision tree to efficiently model mortality improvement and gain in life expectancy. Our future goal is to study the impact of mortality improvement on some mortality-linked financial products.

Quezada, Daniel

Institution: *CA - California State University - Fullerton*

Discipline: Computer Science/Information Systems

Author/Contributors:
Daniel Quezada

Abstract Name: **Data-Driven Real-time Infectious Disease Surveillance App and Dashboard**

With the continuous rise in the global threat of infectious disease, ad-hoc and active surveillance systems for have become powerful tools for monitoring the development and transmission patterns of fast-changing disease outbreaks, by public health officers. These surveillance systems typically track relevant epidemiological data such as number of cases, fatality rates, hot spots, and in most cases, evaluate the impact of public health intervention strategies in these locations. Currently, most disease surveillance systems are built by government organizations and are closed source. This study offers a modular, open-source, web-based dashboard program that is capable of visualizing and identifying epidemiological patterns for any infectious disease of interest, in real time. These visualizations can be in the form of GIS maps, bar charts, line charts, and metrics to track certain indicators. The program's source code is written in Python and uses the Streamlit library to manage both the frontend and backend of the application. Every aspect of this program is built with open-source software; allowing for other researchers and public health officials to adjust the surveillance system to track whatever disease they are focusing on. Given the systematic and timely availability of public health data offered by the CDC, this surveillance system is currently tracking the most recent Monkeypox outbreak in the United States. By visualizing the data related to the 2022 Monkeypox outbreak, the surveillance system can identify the relationship between public health interventions and the fall of cases in the US. Non-governmental organizations or other community-based groups can leverage on, and adapt this dashboard to monitor the spread of any new or quick-onset disease outbreak in their regions.

Quezada, James

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Piotr Filipczak

Abstract Name: **Assessment of the DNA damage and Cell Cycle Arrest of Saccharomyces cerevisiae exposed to Arsenic (III) Oxide.**

Arsenic is a metalloid that naturally occurs in the form of bioavailable compounds in many regions across the Rocky Mountain states. It is classified as an environmental hazard since its ingestion via contaminated drinking water may increase the risk of developing several types of cancer. The present investigation is a part of a project which utilizes a Saccharomyces cerevisiae-based model to study mechanisms of DNA damage and repair caused by exposure to arsenic derivatives. Our past research has demonstrated that a four-hour incubation of yeast cells with arsenic (III) oxide, administrated at 125Mand 250.0M concentrations cause moderate cellular toxicity. This was demonstrated by 44.0% and 70.0% rates of growth inhibition and approximately a 10.0% mortality rate. The goal of the present study is to investigate whether toxicity caused by arsenic (III) oxide treatment is associated with DNA damage. We further intend to analyze which genes and pathways are involved in the inhibition of proliferation that results from that exposure. DNA fragmentation will be examined using alkaline gel electrophoresis. The expression profile of selected genes of known role in cell cycle arrest will be assessed using Real Time-quantitative Polymerase Chain Reaction (RT-qPCR).

Quezada, Melanie

Institution: *WI - Alverno College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Melanie Garcia-Quezada

Abstract Name: **The Determination of Citalopram in the Kinnickinnic River from Milwaukee, Wisconsin**

Milwaukee Water Works in Milwaukee, Wisconsin last tested source water quality for pharmaceuticals and personal care products in 2005. According to the Safe Drinking Water Act, this testing is voluntary. In the current study, the concentration of citalopram in the Kinnickinnic River, one of three major rivers in the lake Michigan watershed, was investigated. Previous studies demonstrate low concentrations of these antidepressants affect aquatic life such as crayfish. To extract citalopram from the water samples, a procedure from the Journal of Chemical Health Risks (2013) was utilized. The procedure consisted of synthesizing magnetic nanoparticles (Fe3O4NPs) and modifying them with sodium dodecyl sulfate. The nanoparticles along with other solutions were dispensed into the water samples to allow for the extraction of citalopram. After separating the supernatant with a strong magnet, the clear solution was then analyzed at 239 nm with a UV Spectrometer. Although there was a concentration of citalopram detected, they had all been previously spiked with 0.78 ppm, in case the concentration of citalopram in the samples was not large enough to be detected with the UV Spectrometer. The data collected demonstrated concentrations of 0.27 ppm, 0.23 ppm and 0.31 ppm from three different locations. The spiked concentration was subtracted from the detected concentrations of each sample. After subtracting the spike, the numbers collected were negative, indicating a loss of the spike in each water sample. To conclude, the data came to be inclonclusive since there was some loss of the citalopram within the samples during the procedure. For future work, it would be recommended to investigate other extraction methods for citalopram from sample water.

Quick, Ava

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Abbigail Pepka *Dylan Adams* *Jessica Dao*
Carly Gifferson *Alicia Olsen* *Jennifer Schwart*
Carly Swenson *Ava Quick* *Nicholas Beltz*
Saori Braun

Abstract Name: Impact of Caffeine Combined with Resistance Training on Post-Exercise Arterial Stiffness in Habitual Caffeine Consumers

Background/Purpose: Increased arterial stiffness has been shown as a marker of cardiovascular-related events. Previous research has revealed resistance training and caffeine consumption leads to increases in arterial stiffness independently. Therefore, the purpose of this study was to determine the residual effect of combining resistance training and caffeine on arterial stiffness in resistance trained females. Methods: This experimental study was conducted on 18participants between the age of 18 and 23yrs who were resistance trained in accordance to ACSM resistance training guidelines. All participants were habitual caffeine drinkers as defined by consumption of at least 200 mg/day, 5 days/wk. Pre-trial evaluation of 10-rep max was performed to determine individual training load for each exercise session. Subjects completed both caffeine and placebo conditions in a counterbalance fashion to avoid an order effect. Caffeine was administered during each trial a dose equal to 3 mg/kg body weight. Each condition was followed by an exercise intervention consisting of a full-body superset resistance training protocol. Measurements of arterial stiffness (pulse wave velocity, pulse wave analysis, and pulse pressure) were obtained using the SphygmoCor® system at 4 different time points (baseline, post-exercis, 10min post-, 20min post-, and 40min post-exercise). Results: A two-way repeated measure analysis of variance (within-subjects) did not indicate a significant difference in measurements of arterial stiffness between placebo and caffeine trials, but a time effect was revealed to be significant within both trials ($p = 0.008$). Conclusion: The results did not indicate a summative increase in measurements of arterial stiffness due to the combination of resistance training and caffeine consumption.

Quijano, Keara

Institution: ***FL - University of West Florida***

Discipline: Nursing/Health Science

Author/Contributors:
Quijano Keara,
Bennett Crystal,
Rodney Guttmann

Abstract Name: The Impact of 12 Weeks of Adapted Dance on Balance, Gait, and Lower Extremity Function Among Persons with Dementia

Person's living with dementia commonly experience difficulty with mobility. Difficulties with these activities can lead to an increased fall risk, resulting in an increased loss of independence. Dance engages various parts of the brain including the cerebellum that is primarily involved in coordinating balance, posture, body positioning, and voluntary movement. An aim of this study was to assess whether 12 weeks of adapted dance improves balance, usual walking speed, and lower extremity function among persons living with dementia. An experimental design was used to randomly assign persons with dementia to either a 12-week adapted dance or social stimulation group. The convenience sample consisted of 12 participants, ages ranging from 62-97 years. The adapted dance is low impact where one foot is always in contact with the floor and is appropriate for older adults with cognitive and physical limitations. At baseline and at 12 weeks, measures of balance, gait, and lower extremity function were assessed. From baseline to posttest, the dance group had greater increased times for maintaining tandem balance (+47.5%) and faster times for usual gait speeds (+15.1%); compared with the social stimulation group tandem balance time (+0.98%) and usual gait speed times (+10.5%). A limitation of this study is the small sample size.

Quimby, Jesse

Institution: ***SC - The Citadel***

Discipline: Physics/Astronomy

Author/Contributors:
Jesse Quimby,
Kohl Hammer

Abstract Name: Impact force due to a projectile passing through vibrating liquids

This experiment will analyze the effect vibrations have on an impact force of a spherical projectile passing through a liquid. The spherical projectile was dropped through water, olive oil, and linseed oil twice: once while the medium was vibrating, and once while it was not. The impact force is experimentally collected by a force sensor. The two impact forces with and without vibrations were analyzed to determine the effect of the vibrations on the projectile and the medium. The average force as the projectile passes through air was experimentally collected as 40.0±1N as the projectile passes through air and 13.8±1N as the projectile passes through water. The equations used to predict the impact force analyze the momentum at the time of impact, which relies on the viscosity of the liquid, the mass, and the radius of the projectile.

Quintero, Brianna

Institution: ***IL - University of St. Francis***

Discipline: Public Health

Author/Contributors:
Brianna Quintero,
Vetona Sarpong

Abstract Name: Comparison of Epidermis Characteristics and Microbiome as a Result of Different Mask Type Usage in Young Adults

The Covid-19 pandemic has highlighted the importance of foundational disease control measures, including personal protective equipment; however, prolonged daily use of respiratory protective equipment can cause a shift in the skin's physiological properties. These changes are likely the root cause of “maskne,” mask-related acne, but not much is known about why these issues occur, and even less about the varying effects between mask types. This longitudinal study compares the effects of surgical masks and cotton masks on pH, temperature, moisture, oil, and microbiome of the facial skin in three areas (cheek, nose, and forehead). The epithelial characteristics of 12 individuals, 18-25 years of age, were analyzed before and after a duration of two weeks of wearing a mask for a minimum of four hours a day. A general trend of increases intemperature, moisture, and oil was found after the use of both surgical and cloth masks. Statistical analyses revealed statistically significant (paired t-test 0.05) increases in cheek temperature (+4.6% and +3.5%)in individuals that wore a surgical or a cloth maskrespectively. Moisture increased significantly at the cheek (+20.6%), nose (+15.8%), and forehead (+21.9%) with surgical mask use and only the cheek (+16.7%) with cloth mask use. The oil content increased significantly, as well, at the cheek (+21.6%), nose (+15.8%), and forehead (+21.6%) with surgical mask use and only the cheek (+17.3%) with cloth mask use. Neither pH nor microbiome quantity or diversity was shown to significantly change with regardto mask use. These patterns canexplain the physiology behind the increase in acne during the pandemic as well as provide insight intowhat can be done to prevent and treat these effects.

Raasch, Bennett

Institution: ***WI - Marquette University***

Discipline: Biology

Author/Contributors:
Bennett Raasch *Ceclia Cruz* *Krassimira Hristova*

Abstract Name: Effectiveness of BAC Disinfectant or Probiotic bacillus Cleaner on Multispecies Biofilms

Biofilms on high-touch surfaces and water distribution pipes are a known contributor to bacterial transmission and infections. Biofilms are a mixture of bacterial cells encased by extracellular polymeric substances (EPS) and attached to surfaces. EPS can shield underlying cells from direct contact with disinfectants making these bacterial biofilms more tolerant than planktonic cells. Therefore, there is a need to understand how current cleaning procedures (treatment concentration, exposure time) affect biofilms formed on high-touch surfaces in workplaces and bathrooms. It was determined that the materials used to represent these high-touch surfaces would be polyvinyl chloride (PVC), acrylic, ceramic, and stainless-steel coupons. For this experiment it was essential to establish an effective, in vitro, and repeatable method of producing multispecies biofilms on the different coupons as they varied in material and size. This was done by fixing the coupons in agar and adding a multispecies media to the coupon and leaving it 24 or 48 hours to develop a viable biofilm. The purpose of this experiment was to determine the effectiveness of a benzalkonium chloride (BAC) disinfectant and a probiotic bacillus cleaner on a formed multispecies biofilm and if there is any regrowth on the coupon surface after treatment. The multispecies biofilm of three different pathogens that formed a suitable biofilm consisted of Staphylococcus aureus ATCC 6538 P, Pseudomonas aeruginosa PAO1, and Candida albicans ATCC 18804. The multispecies biofilm was removed either through sonication or Soya Casein Digest Lecithin Polysorbate (SCDLP) washing solution and then each pathogen was quantified on specific media after dilution. Treatment was found to be effective at reducing the amount of developed biofilm, but was not successful in its eradication which could be due to the treatment not effectively penetrating the biofilm and thus allowing for survival.

Raasch, Joseph

Institution: ***WI - Wisconsin Lutheran College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Joseph Raasch,
Abigail Pechman,
Megan Slaker

Abstract Name: Memory tests and microglia in a mouse model of Alzheimer's Disease

Alzheimer's Disease (AD) is characterized by amyloid plaque development and tauopathy, leading to crippling deficits in learning and memory. Most research has focused on how these amyloid plaques and tauopathy impact neurons in the hippocampus and cortical regions. The extent to which this pathology extends to other nervous system cells remains to be fully investigated. Microglia are a potential cell type contributing to AD pathology due to their accumulation around amyloid plaques. To investigate the changes that occur in microglia during AD progression, we compared wild type mice (JAX stock #101045) to 3xTg-AD transgenic mice (MMRRC stock #34830). This mouse line develops plaques and tauopathy beginning around 3-4 months. Mice were tested on an object location task and an object recognition task at early (7 weeks) or late (47 weeks) in development of the pathology. Briefly, mice were tested on behavior over three days, with one day for habituation to the apparatus, and then one day each for the object location and the object recognition tasks. Following behavioral tests, brains were removed and immunohistochemistry was performed to examine microglia (TMEM119 antibody) within the hippocampus and surrounding regions. Micrographs will be analyzed for the number and shape of microglia. Comparisons between wild type and 3xTg-AD mice and between the behavioral time points will be examined using T-tests and ANOVAs. This examination provides additional details on the development of the AD pathology in the 3xTg-AD mice and its contribution to learning and memory processes.

Radtke, Isabel

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Isabel Radtke *Michael Barrow* *Taylor Phillips*
Tristan Wirkus *Delia Ihinger* *Bri Jol*
Philip Reeder, *Caroline Hayes* *Richard Freund*
Harry M. Jol, *Mikaela Martinez Dettinger*

Abstract Name: **Jungfernhof: discovering a Holocaust burial pit using ground penetrating radar in Riga, Latvia**

Eleven kilometers south of Riga, Latvia, lies the remains of a former Holocaust concentration camp known as Jungfernhof. In December of 1941, ~4,000 Jewish people were transported to Jungfernhof to be killed and put into mass graves. What once was an execution site is now a well-used city park with no indication or memorialization of its past. Halakhah, a set of Jewish laws, forbid the disturbance of burial sites. Ground penetrating radar (GPR) is a nondestructive method of data collection, therefore, allowing research to be conducted while respecting Judaism. The main goal of the project is not to excavate, but to respect and commemorate those who brutally lost their lives at Jungfernhof.While conducting research at Jungfernhof using GPR, topography, 3D imagery, and survivor testimony, evidence of a potential mass burial pit was found. GPR emits electromagnetic pulses into the subsurface and when features such as pits are detected, the electromagnetic pulses reflect an anomaly in the data. A GPR grid 15m x 40m was laid down using tape measures. Using a Sensors and Software pulseEKKO PRO GPR system, 162 lines were collected every 0.25m. The data was collected with an antennae frequency of 500 MHz which triggered every 0.02m by an odometer wheel. The data was then processed using EKKO_Project software. The results show a pit anomaly 1.5m in depth. The 90° “corners'' of the anomaly indicate that the soil has been disturbed by humans.With the dramatic rise of antisemitism and Holocaust denial, it is vital that we use noninvasive methods to respect and commemorate those who brutally lost their lives during the Holocaust. The project will bring awareness to undiscovered evidence of the Holocaust and provide a sense of closure to those who never obtained it.

Rae, Sydney

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Grace Bowe,
Sydney Rae,
Brittney Winter

Abstract Name: **A Comparison of Alluvial Fills in Former Glacial Meltwater Stream Valleys in West-Central Wisconsin**

The Lower Chippewa River (LCR), a tributary to the Upper Mississippi River (UMR) in west-central Wisconsin, drained meltwater from the Chippewa Lobe of the Laurentide Ice Sheet and filled its valley with glacial outwash ca. 30 to 15,000 years ago. Then, as the region deglaciated, the UMR incised abruptly, initiating a wave of incision that progressed up the LCR in a prolonged and episodic manner (Faulkner et al. 2016). For this study, we examined the LCR’s two largest tributaries, the Eau Claire River (ECR) and the Red Cedar River (RCR), as part of an ongoing project to determine how incision propagated through the entire LCR fluvial system and to identify what controlled the incision process. The specific objective of our research was to ascertain the sedimentological characteristics of the alluvial fills in each river valley in order to determine if the fills are similar (as expected, given that both were meltwater streams that drained the Chippewa Lobe) or different. We accomplished this objective by kayaking each river, mapping the location of terrace cutbanks, and describing the alluvium exposed in them. Contrary to what we expected, we found the fills in the two valleys to be clearly different. While both are characterized by tabular cross beds of medium-to-coarse sand with rare gravel, along with planar interbeds of gravelly sand, gravelly sand interbeds are generally more common—and gravel-size clasts typically larger—in the RCR valley. We are uncertain why the RCR fills are coarser. One hypothesis is that the RCR was the larger meltwater river and able to transport coarser material away from the ice margin. Whatever the explanation, the differences in valley-fill sedimentology may have influenced the process of incision as it propagated up each valley. Future research should take these differences into consideration.

Rafajko, Cherish

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cherish Rafajko,
Jennifer Muehlenkamp

Abstract Name: **Social Perceptions of Suicide Among Sexual and Gender Minorities**

This is a replication and extension of Canetto et al.'s 2020 study on the normalization of suicide in sexual minorities. Suicide is one of the most prevalent causes of death in the LGBTQ+ community and thus we seek to examine what social messages are influencing this disproportionate rate. We also seek to gain insight into whether attitudes towards and experiences with suicide, suicidal ideation, and non-suicidal self-injury differ between sexual minorities and gender minorities. We have recruited over 2000 individuals (31.4% sexual minorities, 33.2% gender minorities) through social media advertisements, random email sampling, and snowball sampling. Following consent, participants read one of four randomly presented vignettes describing someone attempting and surviving a suicide attempt. Participants then answered a series of questions about their perspectives about the person in the vignette followed by a series of demographic questions. Approximately 45% of the sample reported having experience with suicide attempts or non-suicidal self-injury by themselves or others. Analyses will include running a series of ANCOVAs, controlling for social desirability, on participant views of the vignette individual's decision to attempt suicide and survival of a suicide attempt, and participants' degrees of sympathy and acceptability towards the vignette individual. Through this study, we seek to gain insight into whether perceptions of suicide differ between sexual and gender minorities and those who do not identify as a sexual or gender minority as that can inform public health campaigns focused on suicide prevention within this high risk group. Finally, we hope to gain insight into whether there is social pressure coming from the LGBTQ+ community to either engage in suicide, suicidal ideation, and/or non-suicidal self-injury, or alternatively if those actions can be attributed to outside factors.

Rag, Aaroh

Institution: *CA - San Jose State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Bhavya Bellannagari *Sri Pariyangat* *Aaroh Rag*
Farwa Kazmi *Syed Kazmi* *Sohail Zaidi*

Abstract Name: **Analyzing Data on Breast Mass Digitized Images using AI/Machine Learning Techniques to Predict Breast Cancer**

Breast cancer is the second leading cause of death in women. It develops in the glandular tissue of the breast, affecting the cells that line the lobules. The most crucial measures to stop breast cancer mortality are early detection and receiving cancer treatment. Despite the rise in medical research, there are still certain issues with cancer diagnosis. It is necessary to do a tumor's histological evaluation/microscopic examination of the image at the cellular level to determine its malignancy. The findings may vary depending on the subjective analysis/interpretation. Therefore, a computer-based diagnostic system is required for accurate diagnosis and early detection of breast cancer. In this study, we analyzed a breast cancer diagnostic data set from the Wisconsin Breast Cancer Database using the IBM Watson Machine Learning Platform. The data set consists of 569 digitized images of individual breast masses that contain cell nuclei information. Out of these 357, were classified as benign and 212 as malignant. The data set captured a range of cell properties, such as the radius, texture, perimeter, area, etc. that were employed as variables influencing the outcome. IBM Watson machine has the capability of developing models by using multiple algorithms. In this study, two algorithms with various enhancements were used including Snap Logistic Regression and Snap SVM Classifier with enhancements. Both algorithms reached an accuracy of about 97%. Some essential images' features include the product of various factors like area-worst, concave points, symmetry worst, smoothness mean, and perimeter worst. Since the overall diagnostic accuracy of the test is high, the model is very useful in predicting the diagnosis of a patient. This presentation includes a detailed analysis of the feature summary, ROC curve, and confusion matrices for various models and their implication in predicting the output results by categorizing the cancer cells as benign or malignant.

Rag, Alaap

Institution: ***NY - University of Rochester***

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Alaap Rag *Pranav Bellannagari* *Farwa Kazmi*
Syed Kazmi *Sohail Zaidi*

Abstract Name: **Exercising AI/ML Techniques to Determine the Likelihood of Developing Diabetes in Individuals**

Diabetes is a chronic disease characterized by elevated levels of blood glucose, damaging the heart, blood vessels, eyes, kidneys, and nerves. Preventive strategies and receiving medical treatments can mitigate the harms of this disease. AI//ML techniques can be utilized to predict the risk of developing diabetes to avoid further complications. Traditional analytical techniques may not be able to analyze large amounts of data related to diabetes, so AI/ML techniques are preferred. Among various platforms, IBM Watson Studio is readily available for developing ML models. In this work, we have used IBM Machine to develop ML models that can predict diabetes in individuals while taking into account their health features. The CDC dataset was collected from Kaggle; it consists of around 250,000 samples with 22 different features, such as BMI, smoking status, cholesterol, high blood pressure, etc. IBM Platform selects algorithms to model the problem in an automated fashion to provide optimized results. In this case, XGB Classifier and Snap Random Forest Classifier were selected to develop ML model. XGB classifier is favored when the dataset is large and performs well on structured data. Snap Random Forest is equally suitable for our dataset as it highlights for accuracy and is quick to build. The model based on XGB Classifier gave a prediction accuracy of about 85.4%, whereas Snap Random Forest Classifier predicted the outcome with an accuracy of 85.2%. This work aims to highlight the advantages of using Machine Learning and the specific models used to assist in diagnosing diabetes as well as predicting future outcomes considering different features of the patients. The final analysis will incorporate the medical aspect of various prominent features that were selected in this study and will elaborate on the confusion matrix, ROC curve, and related summary effects.

Rahman, Sadman

Institution: ***IL - North Central College***

Discipline: **Mathematics**

Author/Contributors:
Sadman Rahman

Abstract Name: **On Some Properties of Higher-Order Rectangular Numbers**

A pronic number is a number that is the product of two consecutive integers, that is, a number of the form n(n+1). The study of these numbers dates back to Aristotle. They are also called rectangular numbers. In our study, we explore some interesting properties of higher-order rectangular numbers. The n-th rectangular number of order h, Rh(n), is a number of the form n(n+h). In this terminology, the pronic numbers are rectangular numbers of order 1. Motivated by the properties of the first-order rectangular numbers, we investigate if similar properties exist for rectangular numbers of an arbitrary order n. Although both of these numbers share most properties, some properties of the first-order numbers are seen to be significantly different than their higher-order counterparts. In this study, we explore and motivate these results and propose a couple of conjectures to be studied further.

Rains, Alexia

Institution: *NE - University of Nebraska at Omaha*

Discipline: Biology

Author/Contributors:
Alexia Rains,
Chris Engsberg,
Mukul Mukherjee

Abstract Name: **The Effect of Tactile Augmented Insole Stimulation in a Sequential Pattern on Healthy Walking**

The soles of the feet are the only body surface that make direct contact with the environment, thus are a critical source of information with respect to environmental navigation while walking. Several studies have indicated that plantar sensitivity is correlated with balance, which would imply that it plays an important role during gait. While research has been conducted to examine the effects of plantar cutaneous stimulation, very little research has investigated how specific patterns of tactile stimulation may affect walking balance and gait patterns. The aim of this study was to determine how sequential vibro-tactile stimulation to the plantar surfaces of the feet affects walking balance and symmetry during different walking tasks in healthy subjects. Various dynamic balance and gait characteristics were measured using force plates and a motion capture system. Stimulation patterns included no stimulation, sequential circle stimulation and reversed sequential circle stimulation, each collected at level incline, 5-degree incline, and 10-degree incline. Stimulation patterns could be causing a change in foot placement area but are not overly affecting other dependent measures. The reversed sequential circle stimulation caused the greatest decrease in foot placement area relative to the other two patterns at all inclines. With further investigation, these results will help to clarify which pattern of stimulation causes the greatest effect and how such responses could be beneficial in rehabilitation for individuals with decreased plantar sensitivity. Overall, this study will help in the further understanding of the effects of plantar cutaneous stimulation in healthy adults and potentially translate into rehabilitation methods for stroke survivors and other patients with decreased plantar sensitivity.

Raj, Aaryan

Institution: *FL - Florida Atlantic University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Carter Sale,
Aliza Sloan,
J.A. Scott Kelso

Abstract Name: **Critical Dynamics in the Emergence of Agency**

As adults we understand that our actions can affect the world. Less clear is how we become aware of our causative powers in infancy. This study aims to capture and describe the dynamics of the emergence of agency, action towards an end. The mobile conjugate reinforcement paradigm provides an experimental window into this process. Infants begin the experiment as detached observers, but when one of their feet is tethered to an overhead mobile, infants may discover their ability to move the mobile. A sudden increase in movement rate is proposed to mark a moment of agentive insight (Kelso, 2016; Kelso; Fuchs, 2016). Sloan (2022) collected 3D movement data at 100 Hz from 16 babies (age: M = 100.33 days, SD = 15.57) and calculated cumulative displacement of the tethered foot during infant~mobile interaction. This was differentiated twice across 1-min.-wide intervals with 10ms shifts (using the Matlab function movingslope.m) to produce 1-min. changes in movement rate (acceleration). We will apply linear regression to cumulative displacement in the minute preceding and following the infant's peak acceleration to explore dynamics related to agentive discovery. We predict that the magnitude of fluctuations will be greater before maximum acceleration than after since fluctuation enhancement is a hallmark of complex systems nearing phase transitions (Kelso, et al., 1992). Identifying mechanisms underlying the emergence of agency may help develop an array of novel treatments as aberrations in agency are involved in movement disorders (Kranick, et al., 2013) and mental illness (Szalai, 2016; Jeannerod, 2009).

Rajamani, Anindita

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Anindita Rajamani *Liza Meredith* *Martin Michalowski*

Abstract Name: **Application of Gradient Boosted Decision Trees for Understanding Predictive Factors of Depression**

Background: Depression affects 300 million people globally and is a leading cause of disability1. Methods to identify patients with depression and understand predictive factors for its development are vital. Machine learning (ML) can be a powerful tool for this. XGBoost, which is an implementation of the gradient boosted decision trees algorithm, is particularly applicable. This study explores a unique application of classification-based XGBoost for understanding predictive factors of depression from nationally representative survey data.
Methods: This project utilized National Health Interview Survey (NHIS) data from 2020, with 31,568 responses. Data was preprocessed to eliminate features with excessive homogeneity. XGBoost was applied to create ML models that could predict the occurrence of depression in an individual (target variable), as determined by if the respondent was prescribed antidepressants. Feature selection was applied to determine which other respondent characteristics were closely correlated with depression. To ensure the best accuracy, randomized hyperparameter search was conducted. The results from confusion matrices assisted in guiding the optimization. The respondent features were selected on the basis of a feature importance threshold. Results: Figure 1 depicts how many respondents were accurately classified. The 1s represent the occurrence of depression, while the 0s represent the opposite. Those areas in which the true label and predicted label match significantly outweigh those in which the labels do not. The model has a Precision of 0.94, a Recall of 0.95, and an F1 Score of 0.94. Some features that the model relied on most to make its prediction were whether respondents: took anxiety medication, took sleep medication, received therapy in the last year, and could afford balanced meals. Discussion: Researchers can utilize this methodology along with these predictors to approximate whether patients have depression directly from medical records. This can be useful for guiding new provider-

Ramirez, Adrian

Institution: *TX - Tarrant County College*

Discipline: **Nursing/Health Science**

Author/Contributors:
Mayra Camarena *Adrian Ramirez* *Lizzeth Sanchez Gutierrez* *Ashlee Webster*

Abstract Name: **Location of cartoid body oxygen sensors in the Alligator mississipiensis**

This research sought to identify the location of the carotid bodies in the Alligator missisippiensis. Biologists are interested in alligators due to their evolutionary success and distinct physiology. Their unique cardiopulmonary system has been researched, yet to date little has been published about the exact location of alligator carotid bodies. In humans, carotid bodies detect changes in blood levels of CO2, O2, and H+ and help maintain blood-gas homeostasis. Carotid body dysfunction can cause congenital central hypoventilation syndrome (or Ondine's Curse) and other forms of sleep apnea. Alligators are useful as a study model for understanding the evolution of blood-gas regulation in terrestrial vertebrates since they have changed little in the last eight million years. Further research on their vasculature and carotid bodies may help researchers understand how to treat certain human carotid body related diseases. Prior studies have determined that the carotid bodies in mammals are typically located at the bifurcation of the internal and external carotid arteries found laterally in the neck. The authors hypothesized that alligator carotid bodies would also be located at the bifurcation of the internal and external carotid arteries, although in alligators, this bifurcation is located on the posterior surface of the skull. Methods used in this study included vascular dissection of seven juvenile, female alligators, vascular casting, and Kluver-Barrera histological tissue staining for identifying myelin. The researchers' results showed that myelin was located at the bifurcations of the external and internal carotid arteries, indicating the likely presence of nerve fibers from the glossopharyngeal nerve and carotid body. Interestingly, as suggested by prior CT scans of alligator vasculature, the researchers also confirmed via direct dissection that the branching patterns of the left and the right carotid arteries were asymmetrical in the alligators studied.

Ramirez, Luis

Institution: *UT - University of Utah*

Discipline: **Business**

Author/Contributors:
Luis Ramirez

Abstract Name: **The Intersectionality of Entrepreneurship and Latinx Critical Theory: Promoting Access to Credit for Latinx Entrepreneurs of Construction Companies with Alternative Methods of Financial Reporting**

Disproportionate outcomes exist in entrepreneurship based on the identity of the founders. While the Hispanic/Latinx population accounts for 19% of the United States population, Hispanic/Latinx owned businesses account for only 5.8% of all businesses. We are especially interested in understanding how a Hispanic/Latinx identity impacts entrepreneurial outcomes in the low-barrier industry of construction. Since many studies explore the obstacles and barriers in education for Hispanic/Latinx students, this paper explores the challenges in accessing start-up capital in the form of credit. This study collects data from the Utah Department of Occupational and Professional Licensing to estimate the number of contractor construction companies owned by Hispanic/Latinx founders. We also use the contact information in the dataset to distribute an IRB-approved survey on all construction contractors in Utah. The survey collects firm data and owner demographic data. Using Python, the firm and owner demographic data will be used as independent variables for a regression analysis to predictthe challenges forHispanic/Latinx construction companies to access credit. The findings of our research provide alternative methods of financial reporting and credit risk assessment for promoting Hispanic/Latinx entrepreneurship in construction and solving the shortage of affordable housing. Currently, our study is being reviewedby the Institutional Review Board (IRB) at the University of Utah.

Ramirez, Maria Paula

Institution: *GA - Georgia State University*

Discipline: **English/Linguistics**

Author/Contributors:
Maria Paula Ramirez

Abstract Name: **The Literature of Siu Kam Wen and Julia Wong Kcomt: Disrupting Universalism in Perus Popular Narratives**

Peru has the largest population of Chinese people in all of Latin America. In Peru, “Tusán” describes the identity of Chinese Peruvians or Peruvians of Chinese ancestry. Many Chinese and Tusán writers, artists, and politicians have shaped the Peruvian historical and social landscape. Yet, Peru’s national narrative ignores Chinese contributions. Tusán families began emerging in the 1870s but would not be acknowledged or given racial category by the Peruvian government until the 20th century. Scholar Isabelle Lausent-Herrera argues that this lack of acknowledgment signified that Chinese-Peruvians had no real place in Peruvian society.Historians Elliott Young and Jason Chang argue that constructions of Latin American mestizaje and national belonging relied on anti-Chinese racism. My presentation aims to complicate popular narratives of what it means to be Peruvian and Tusán by engaging with the literature of two important contemporary writers: Siu Kam Wen (b. 1950) and Julia Wong Kcomt (b. 1965). While Siu Kam Wen explores the Chinese diaspora within the border of Peru through the “immigrant consciousness,” Julia Wong Kcomt’s poetry conveys her cosmopolitan vision between borders. Both authors explore diasporic identities, Peru’s xenophobic history, and disrupt Peru’s national Eurocentric narrative by presenting their own decolonial and alternative knowledge which has emerged from their Asian-Peruvian experiences. References: López-Calvo, Ignacio.Dragons in the Land of the Condor: Writing Tusán in Peru. Tucson: The University of Arizona Press, 2014, p. 5-8.

Ramos, Angelica

Institution: ***TX - The University of Texas at San Antonio***

Discipline: Psychology/Neuroscience

Author/Contributors:
Angelica Ramos *Kelly Lozano-Ortiz* *Ada Felix-Ortiz,*
Stephanie Villalon *Jose Rodriguez-Romaguera* *Anthony Burgos-Robles*

Abstract Name: Evaluation of prefrontal cortical circuits in an animal model of social phobia

Social phobia is a chronic anxiety disorder in which individuals suffer irrational uncontrollable fear during social interactions. Despite its high lifetime prevalence (~12% U.S. adults), little is known about the neuropathology of this detrimental condition. In this study, we are implementing a novel mouse model to evaluate the involvement of brain circuits formed by the prefrontal cortex (PFC), which have been previously shown to tightly regulate fear and anxiety. We already validated the mouse model, known as social fear conditioning (SFC), in which mice received mild punishment (0.40mA electric shocks for 1s) every time they social interacted with a social stimulus (another mouse confined to an adjacent cage). After a single training session with just a few punished social interactions, the experimental group developed a strong reduction in social behavior and a significant increase in anxiety-related behaviors such as freezing and avoidance, compared to the control group that did not experience social punishment. We are now examining the contribution of distinct subregions of the PFC – namely the infralimbic (IL) and prelimbic (PL) cortices – using an optogenetic approach which allows us to silence neural activity in the discrete brain regions. Preliminary results show IL silencing does not affect social fear learning. While IL seems trivial, a recent study suggests that PL may play a more prominent role for social fear learning (Xu et al., Neuron 2019). In addition, we are examining the contribution of key PFC inputs, such as the ventral hippocampus (vHPC), which has been implicated in several forms of fear learning, anxiety, and social behavior. Overall, this study has the potential to provide novel insights on the neural circuits promoting social fear learning and the development of social phobia in humans.

Ramos, Genesis

Institution: ***TX - San Jacinto College***

Discipline: Mathematics

Author/Contributors:
Genesis Ramos

Abstract Name: Bringing Math off the Page with 3D Prints

The future of using 3D printers to improve visual learning is now. The constant struggle for educators to ensure that students are retaining information long term can reach a turning point by using manipulatives in the classroom setting. Using manipulatives in the classroom would promote active learning and have students further engaged in their courses. Harvard is the leading university into this idea by using 3D prints in their high-level math courses. Having math courses, especially Calculus, being the most failing subject in the country the proposal of 3D printed manipulatives to improve engagement and visual learning has shown promise in passing grades and long-term retention. This new way of learning can show students how math does not always have to be on paper but can now be in the palm of their hands. This can help achieve the goal of shifting from short-term memory to long-term memory in different level math courses. Active learning with 3D printed manipulatives is an essential part of any successful math course and that can be improved with this new growing technology.

Randall, Lori

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: FAN Abstract

Author/Contributors:
Ryan O'Leary,
Lori Randall,
Laura Lee,
Sandra Neumann

Abstract Name: **Fostering Creative Inquiry on the Two-Year Campuses: A Discussion at the Confluence of Humanities, Sciences, and Academic Support**

As undergraduate research is a high-impact pedagogical practice, offering our students opportunities for meaningful and creative inquiry and guiding them as they undertake that inquiry is especiallyimportant on the two-year campus. Some of our students will graduate with an associate degree, meaning that this is the only chance they will have to do this work. Others will transition to four-year institutions, where they will need to be prepared for higher-level research when they arrive. At the same time, two-year colleges present unique challenges in supporting undergraduate research and embedding it into the curriculum. This panel will share some of the challenges faced by students, faculty, and staff in our two-year colleges from three perspectives—the sciences, the humanities, and academic support—then guide a discussion about strategies for meeting those challenges to enrich undergraduate research and creative inquiry. By bringing together these perspectives, we will examine undergraduate research on the two-year campuses at the confluence of the humanities, the sciences, and academic support with the goal of fostering creative inquiry and preparing our students to succeed in the next stage of their intellectual growth.

Raneri, Gianna

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Gianna Raneri,
Ashley Strevig,
Ryan Keagy,
Conor Ryan,
Katryna Williams

Abstract Name: **Effects of chronic exposure to the herbicides glyphosate and glufosinate on six spider species**

Glyphosate is the most used herbicide in the world. Due to the evolution of glyphosate-resistant weeds, it is often applied with the herbicide glufosinate ammonium. The individual and combined effects of these herbicides on beneficial agricultural species such as spiders have been poorly studied. Different spider species may vary in herbicide susceptibility due to size differences and microhabitat preferences. We measured mortality of six agricultural species of spider when chronically exposed to field-relevant concentrations of glyphosate, glufosinate, glyphosate and glufosinate or untreated control soils over a 15-day period (N=892). We tested the web-building spider Frontinella pyramitela, two plant-dwelling species, the crab spider Mecaphesa asperata and nurseryweb spider Pisaurina mira, and three ground-dwelling wolf spider species: Tigrosa helluo, Rabidosa rabida, and Pardosa milvina. Glyphosate showed no hormetic or toxic effect among any spiders, however glufosinate-exposed spiders showed significantly higher mortality than the control treatment for all tested species. For larger sexually-dimorphic spiders, male mortality was significantly higher than females among glufosinate treatments. We also found a significant antagonistic interaction between glyphosate and glufosinate for Pardosa, with spiders sprayed with both herbicides surviving longer than those sprayed with glufosinate alone. Our results indicate that glufosinate is a functional araneocide and recommend caution using it within crop systems where biocontrol is a significant component of integrated pest management.

Rani, Zobia

Institution: *MD - Salisbury University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Seth Friese *Joshua Sokoloski* *Anthony Rojas,*
Zobia Rani *Ann Thomas* *Gabrielle Guy*
Wren Adkins

Abstract Name: **Finding Better Solutions for Available MRI Contrast Agents - Fe(II) Complexes Exhibitng Temperature Dependent Spin Transition**

Studies have shown that existing contrast agents containing Gd that are used in Magnetic Resonance Imaging (MRI) are neuro- and nephrotoxic and can accumulate in the brain for many patients, especially those with renal complications. Our goal is to find a replacement for Gd contrast agents by designing an agent based on Fe(II) complexes that is dynamic, activatable, and targeted for thermal tumor ablation therapies. A key property of Fe(II) complexes is that they can undergo thermally induced spin-state crossover (SCO). However, finding an appropriate temperature range in which a SCO would occur for these therapies is critical for future applications.The behavior of numerous SCO complexes, particularly octahedral Fe(II) complexes, has been well described. Key to meeting the goals of this project is identification or chemical manipulation of currently known structures that undergo temperature-induced SCO without degradation at temperatures between 60 – 80 °C. Prior SCO complexes have been found to undergo spin transitions at much lower temperatures due to difficulties in stabilizing low spin states at room temperature. In the case of terpyridal Fe(II) complexes, the high stabilization of the low spin states results in SCO temperatures that are too high.Thus, to find iron complexes that meet the temperature SCO requirements for a contrast agent, we have synthesized a new type of tridentate ligand that contains a bipyridal unit along with a pyrazole, triazole, or an imidazole group. We will use these new ligands to explore their structural characteristics and feasibility towards MRI contrast agents and biological applications. The synthesis and characterization of all Fe(II) compounds, along with their magnetic susceptibility at various temperatures to determine their potential effectiveness as contrast agents, will be presented.

Rao, Deepa

Institution: *VA - Virginia Commonwealth University*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Deepa Rao

Abstract Name: **Funny Women, Changing Times: Differences In Feminism Between 30 Rock and Parks and Recreation**

Many critics agree that 30 Rock and Parks and Recreation are two of the best sitcoms that have come out of NBC. Both have garnered widespread critical acclaim, due to their storytelling, comedic chops, and feminist depictions of their 21st-century female protagonists. This essay aims to examine the ways and differences in which 30 Rock and Parks and Recreation portrayed their female casts, as well as how they portrayed the relationships between women and feminism overall. 30 Rock's cynical approach, bolstered by the post-9/11 cynicism present in George Bush's America, often took leaps that not many TV shows had attempted before, showing protagonist Liz Lemon as a career-focused woman who was unapologetically bad at many aspects of everyday life. Parks and Recreation started off with a similarly cynical tone (most likely informed by the creators' previous show, The Office) but made a dramatic change in its second season, with protagonist Leslie Knope not being characterized as a fool for her optimistic, perseverant, and unabashedly feminist nature. While neither show strayed far from the bounds of white feminism, Parks and Recreation, premiering three years after 30 Rock and less than one year after Barack Obama's decisively hopeful presidential win, had a gender-balanced cast and actively promoted the ideals of feminism; 30 Rock, on the other hand, did not have such a sincere attitude towards feminism, but allowed its female protagonist almost as much leeway in terms of makeup and styling as a male-lead show would allow its own main character. Both of these shows deeply influenced American pop culture, and their approach as different sides of the same coin allowed their feminist ideals to influence America as well.

Rasch, Rory

Institution: *MT - Montana State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Rory Rasch,
Stephanie Ewing,
Stephan Warnat

Abstract Name: **Development of Technology Platform for the Integration of Several Micro-Sensors to Monitor Water Quality**

The demand for high-productivity agriculture has led to the increasing degradation of aquatic ecosystems - often due to fertilizer contamination. Because of this, water quality monitoring will be essential to guaranteeing high-quality consumable fresh water in the future. Unfortunately, commercial water quality measurement technologies are often expensive or -intensive and do not allow in situ measurements. Therefore, this project has sought the development of a low-cost technology platform that integrates several micro-sensors to monitor water quality over extended periods. This is based on previous research that showed that micro-fabricated conductivity and temperature sensors are of comparable accuracy to traditional benchtop alternatives. These sensors are paired with commercially available screen-printed pH sensors and integrated into a 3D-printed mechanical housing. The full platform fits within a 1-inch diameter tube and is fully watertight, allowing for deployment to waterside test sites. This platform has been characterized by using an LCR to understand the behavior of the sensors further. The platform design and operation will be further optimized using water samples from the Judith River Basin, MT. This will allow for the prediction of the platform behavior during future deployment. Ultimately, it is hoped that the platform will aid in developing and testing new sensor designs and selective materials under environmentally relevant conditions.

Raskind, Fanny

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Omar Ahmed

Abstract Name: **Understanding the Neural Circuits Responsible for Cognitive Flexibility in Health and Disease**

Neurons control many aspects of our brain, such as navigation, perception, and memory. Healthy neurons allow these basic human functions to work properly. In this project, we seek to understand how and why cognitive flexibility is impared in neurological and psychiatric disorders such as epilepsy and Alzheimer's disease. We do this by developing a high through-put automated task to evaluate the neural circuit mechanisms underlying these disorders.The lab performs numerous tests using mice and rats to document neurological data and analyze it. In this project in particular, the Feeding Experimentation Device version 3 (Fed3) is most commonly used to develop a cognitive flexibility task. The Fed3 allows for experimental flexibility because the user can tweak the precise behavioral design, allowing them to study the roles of different brain regions. The rodent is placed in the Fed3 and then trained on operant tasks which depend on what neurons or behaviors the user wants to analyze. The fully-automated Fed3 control system ensures that the animals are not distracted by interference from the experimenter, and can perform the tasks over long durations in their home cages. Every event detected by this device is stored in an SD card for offline analyses. In a subset of tests, we use high density electrodes to record the simultaneous activity of neurons in multiple brain regions.It is expected that the data will help researchers understand how healthy neurons in the brain compute different functions. The next step is to analyze the data and identify the neuronal subtypes in the frontal cortices that are chiefly responsible for supporting cognitive flexibility. By understanding how healthy neurons operate, problems in unhealthy neurons can be identified. These results ultimately would be used to therapeutically repair the damaged neurons and computations in individuals that suffer from neurological disorders.

Rath, Shavonnye

Institution: *MN - St. Catherine University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Shavonnye Rath *Arianna Balingit* *Joshua Guggenheimer,*
Melanie Homan *Jennifer Hutson* *Marcie Myers*
Ginny Green

Abstract Name: **The Impact of Far-Infrared Technology on Quality of Life in Older Adults**

Identifying various methods of pain amelioration to meet the unique demands of older adults (OA) may be crucial to increasing the quality of life (QOL) of this population. The purpose of this randomized, single-blinded study was to examine the effects of far-infrared heat (FIR) on pain management and QOL in OA. FIR utilizes a long light wavelength that simulates dry sauna-like conditions. Examining the relationship between FIR and pain is important due to the increased prevalence of chronic pain associated with aging and the corresponding impact it has on QOL and physical performance. Nine OA completed the study, eight of whom were women. Participants were randomly assigned to either a convective heat group (CON) or a convective and far-infrared heat (FIR) group, with convective heat set to 60℃/(140℉). Participants received six, 30-minute heat sessions over the course of three weeks. Pre- and post-assessments included physical measures such as range of motion, gait speed, timed up-and-go, and hand grip strength. Standardized questionnaires were used to determine pain severity and its interference with daily life, and the impact pain had on overall QOL, using a five-point scale. T-tests were used to compare the groups' pre- and post-assessment measures. Results indicated that pain severity was significantly reduced (from 3.31 to 2.5, 0.05) in the FIR group from pre-to-post, and that pain interference was significantly reduced (from 1.26 to 0.43, 0.05) in the CON group from pre-to-post testing. No other significant differences were found. Findings suggest that heat therapy was successful in reducing pain over time, but that FIR heat specifically, was not superior to that of convective heat alone. Our results couldn't discriminate between the independent effects of FIR and convective heat benefits. Further research is required to properly identify the relationship between QOL and the use of FIR.

Raugh, Jake

Institution: *VA - Randolph-Macon College*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jake Raugh

Abstract Name: **Optimization of Pitch Angle and the Effect of Moment of Inertia on the Efficiency of Wind Turbines.**

With fossil fuels quickly becoming outdated due to the growing awareness of their negative impacts on the health of the general public and environment, clean energy is becoming increasingly necessary to ensure the survival and health of our planet. Wind energy, along with a multitude of other forms of renewable energy, is emerging into the foreground of clean energy options. Wind energy utilizes rotating wind turbines to transfer kinetic energy from the wind into electrical energy. This project's primary goal is to evaluate the relationship between the moment of inertia of wind turbine blades and the overall efficiency of the turbines, and to experiment with varying the center of mass of the blades, which in turn changes the moment of inertia, and how it can affect the power output of these turbines. It will also focus on altering wind speed, pitch angle, and moment of inertia together in order to find the most optimal combinations of these variables, both during constant wind speed and the lack thereof. Our findings support the theory that altering the moment of inertia of turbine blades not only affects the efficiency of wind turbines, but that altering the moment of inertia depending on the behavior of the wind will prove beneficial in increasing the longevity of rotation of the blades and the efficiency of remote braking systems. The data shows that the optimal moment of inertia for wind turbines is heavily dependent on the instantaneous wind conditions, which provides a potential for future research on designing and creating a system that will automatically alter the moment of inertia within the blades in real time, which will be the focus of future research for this project.

Ravada, Shreyas

Institution: *CA - San Jose State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Erick Vazquez *Shreyas Ravada* *Sohail Zaidi*

Abstract Name: **Improving the Strength of 3D Printed Material by Inducing Low Frequency Vibrations**

3D printing is a cost-effective option compared to other manufacturing methods but the printed parts from conventional materials (PLA+,PETG,ABS) often do not exhibit great tensile strength. The limitations come from the amount of the material and the fill factors used. Traditional methods to increase tensile strength include applying greater infill factors and thicker sample features but these methods may result in greater printing times/cost. To overcome this limitation, work at San Jose State university is inducing low frequency (5-10Hz) vibrations during the printing. For this purpose, a vibration motor (ERM/MTR/9000RPM-1.3V) was directly attached to the nozzle of the printer (Tronxy/X5SA). A special holder was used to hold the motor to attach it to the printer head to induce vibrations during the printing. For the overall dimensions of the specimen, ASTM-D638-Type-1 standard was adopted that gave the printed samples a thickness of about 7 mm. Different printing conditions included the variation of the fill factor (20%,60%,100%) with and without vibration. The printed samples were examined against the porosity and a fluid displacement method was adopted. Experiments show that induced vibrations were able to lower the porosity by 10 to 15% for identical fill factors. Initially samples were sent to Applied Technical Services (Gorgia) and the tensile strength for all printed samples (100% fill factor) with and without induced vibration was measured. The testing results indicate that for our 3D samples, induced vibrations did increase the tensile strength from 26.2 to 30.7MPa (~17% increase) for the corresponding applied loads of 4.1kN to 5.15kN respectively. The corresponding increase in the maximum stress was about 15.7% for 60% fill factor printed parts. New results from an inhouse testing machine at SJSU are being collected and analyzed. Final presentation will include full discussion on the impact of induced vibrations for various sample materials.

Ravara, Tia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Alyssa Corder,
Ilka Malin,
Tia Ravara,
Chelsea Ortiz-Jimenez,
Jennifer Smith

Abstract Name: **Caught on camera: Are humans a safety cue for mammalian vertebrates?**

Anthropogenic pressures are imposing environmental modifications at unprecedented spatial and temporal scales to drive ecological change. One provocative notion is that fear of humans (so called “super-predators”) in human-altered landscapes may substitute for predation pressures that were historically imposed by large mammalian carnivores. This project addresses the question of whether free-living mammals actively avoid or are attracted to human presence over space and time. We examined the impact of human activities on the assemblages of free-living mammals as part of a long-term behavioral ecology study at Briones Regional Park in California. Specifically, we characterized the presence of humans, their dogs, and native vertebrates by analyzing thousands of photos from automated-camera traps (e.g., trail cams deployed over the past several years). We tagged photos of coyotes, bobcats, deer, skunks, and ground squirrels using the image software organizer “digiKam” and analyzed the data using the R statistical package “camtrapR.” We report on variation in the visitation rates by mammals across space and time to uncover the interrelationships among multiple species within the park. Our data set documents the crepuscular activities of carnivorans (e.g., bobcats, coyotes, skunks) and offers insights into the potential effects of visitation by humans (and dogs) on the lives of these elusive mammals. This information about the activity schedule of these animals offers key insights into the behavioral ecology of these animals as well as useful information for wildlife managers as burgeoning human populations visit natural areas.

Ravishankar, Reshma

Institution: ***CA - Irvine Valley College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel Ongoing Investigation

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Ray, Isea

Institution: ***FL - University of West Florida***

Discipline: Education

Author/Contributors:
Isea Ray,
Nathan Harris

Abstract Name: Developing an Interdisciplinary Lesson on Microplastics using a Project-Based Learning Approach

Microplastics are a problem globally and in our local waterways. As such education on microplastics should not start only in college but as early as middle or high school. In 2019, aUniversity of West Florida (UWF)Biology Teaching major developed a microplastic lesson plan under the guidance oftheir STEM facultyadvisorand in partnership with alocalhigh school science teacher. This lesson planis in need ofrevision to keep abreast with changing standards, as well as updated protocols for microplastic sampling and analysis in ways that are inclusive and support of students and their needs.As such two UWF STEM Teaching majors – one Biology and one Environmental Science collaborated to undertake this task. The students reviewed local efforts to address microplastics such as the Florida Microplastics Awareness Project as well as other scientific literature on the scale of sand solutions to the problem of microplastics. The STEM teaching majors then utilized the 5E pedagogical model as well as Inquiry Based Learning techniques to develop a lesson plan on microplastics that integrated biology andenvironmental science content. The lesson is to cover a period of 5 daysand covers the water cycle, provides training on microplastics, lays out the procedure of filtration and using a microscope, and then concludes with a lesson and lab on biomagnification and bioaccumulation. By using a universal design approach to learning, this lesson plan ensures that STEM content is accessible and relevant to all students regardless of theirbackgrounds or abilities.

Ray, Ishani

Institution: *OK - Oklahoma State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Ishani Ray,
Amita Chawla,
Elizabeth McCullagh

Abstract Name: **Characterization of auditory physiology in FXS in critical developmental timepoints**

Autism spectrum disorders are strongly associated with auditoryhypersensitivity. Fragile X syndrome (FXS), a common monogenic cause of ASD, results from transcriptional silencing of the Fmr1 gene and reduced expression of fragile X messengerribonucleoprotein (FMRP). FMRP directly impacts myelinproteins and various brain regions show reduced/delayed myelination in FXS, suggesting deficits seen in FXS may be caused by alterations to myelination. FXS is a neurodevelopmental disorder, therefore characterizing when during development auditory dysfunction arises in addition tounderstanding if these changes are myelin dependent is critical to elucidating the full etiology of FXS. Auditory brainstem response (ABR) measurements record 1-4 waves, each corresponding to part of the ascending auditory pathway; the latency of which could be directly related to myelination of auditory areas. To characterize the physiology of myelination deficits in FXS at developmental time points, ABR measurements were taken for transgenic Fmr1 mice and controls before (P8-10), during (P12-14) or after (P21-23 and adult) hearing onset in mice. This allowed us to study the developmental emergence of auditory disruptions in Fmr1transgenic mice and identify critical windows where underlying auditory pathways are established. We hypothesize that transgenic Fmr1 mice will have increased latencies in their binaural ABR waves (3, 4 & BIC) compared to the wildtype at different developmental time points. These data will aid in identifying the critical developmental windows of neural circuitry establishment in auditory sensory systems and potential myelination impairments that underlie auditory dysfunction observed in patients and mice with FXS.

Ray, Mikelene

Institution: *WI - Alverno College*

Discipline: FAN Abstract

Author/Contributors:
Mikelene Ray *Angela Frey*

Abstract Name: **Enhancing STEM identity among women through participation in community STEM activities: An ecological systems theory approach**

Alverno College is a designated HSI women's college serving primarily first-generation, and low-income students. Several lines of research strongly support the recommendation that community engagement can increase STEM retention for underserved students (Lozano, Franco, Subbian, 2017; Estrada, et. al., 2016). In addition, Estrada et al. 2016 found that showing students how to creatively link their STEM training to the needs of their communities is an effective strategy for increasing URM students' success in STEM. We extended this research by applying Brofenbrenner's model of human development to enhance STEM identity among women STEM majors. Our approach has been to place the individual student in a pro-social STEM community ecosystem to promote development and maintenance of their STEM identity (Miller, 2011). Alverno College's Truchan STEM Community Impact Program (T-SCIP) program funded by NSF IUSE HSI (award #2122903) applies evidence demonstrating that women and underserved students in STEM are motivated by directly experiencing ways STEM benefits the communities where they live. Specifically, the T-SCIP program provides multifaceted community based activities involving STEM peer mentoring, STEM faculty support, engagement with STEM community partners, the social support communities for the student (such as, family and friends), STEM alumnae, and the STEM professional community. We will report program organization and preliminary findings of the impact Alverno College's T-SCIP program has on STEM identity, sense of belonging, interest in pursuing research opportunities and graduate school study in STEM. Using a quantitative and qualitative study design, preliminary data suggests participants discuss the benefits of learning from each other, as well as having opportunities to develop personal leadership skills in science. Survey questions indicate participants gained confidence for doing science and being a scientist. We will also report retention and persistence to graduation rates in STEM.

Ray, Shawn

Institution: ***OK - Oklahoma State University***

Discipline: Physics/Astronomy

Author/Contributors:
Shawn Ray,
Kimberly Zoldak

Abstract Name: Examining biases in the measurement of a Gamma-ray Burst?s Isotropic Equivalent Energy caused by inconsistently derived T90 durations

The isotropical equivalent energy (Eiso) of a Gamma-ray Burst (GRB) is believed to be an estimation of the total energy released by the GRB's central engine in the form of X-rays and gamma-rays. This energy is treated as if it has both physical and cosmological implications, however, its measurement may be significantly biased by the individual analyzing the data.One way in which this energy can be biased is the method for which a GRB's T90 duration is determined. The calculation of Eiso relies on the time-integrated spectral modeling of a segment of data determined by the GRB's T90 duration. Thus, if the T90 starting and ending times are inconsistent between two different methods, then the spectral modeling results may return drastically different results. For example, if one analyst finds a T90 duration that starts later and/or ends earlier, then their spectral modeling results will likely find a Band function profile representing a harder spectrum.Just between the telescope instrument teams, T90 derivation methods have varied. The CGRO/BATSE instrument team's durations were derived by accumulating raw photon counts across time bins, the Fermi GBM instrument team's durations are found by accumulating the spectrally modeled fluences within these time bins, and the Swift BAT instrument team uses the Bayesian Block algorithm.In this work we explore bias in the value of Eiso caused by simply adopting the Fermi GBM team's T90 duration versus deriving our own T90 duration using the Bayesian Block algorithm. Our preliminary results have already shown that the Bayesian Block algorithm can find significantly different T90 starting and ending times, thereby leading to drastically different spectral modeling profiles and Eiso energies for the same GRB.

Rayhorn, Bryanna

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Bryanna Rayhorn,
Annabelle Klevann,
Sarah Vitale,
J. Brian Mahoney,
Laurel McEllistrem

Abstract Name: Lake Eutrophication: Natural vs Anthropogenic Phosphorus?

Lake eutrophication in western Wisconsin results from excessive nutrient loading (P, N), and mitigation of the issue requires quantification of the ultimate nutrient source. Lake eutrophication events are not consistent across the region, but seem to vary with bedrock geology, hydrogeology, and land use. Lake eutrophication is assumed to be the product of nutrient overload associated with agricultural runoff. A regional surface water study shows elevated concentrations of P across the region. Seasonal values vary between peak agricultural months (July: ~160-180 ppb) and the winter months (November: ~20-95 ppb). The same study analyzes groundwater, documenting extremely elevated levels of P, which is problematic because it is believed that agricultural P does not enter the groundwater system due to absorption by the soil profile. The ultimate source of P in groundwater is unclear and discerning the role of anthropogenic vs natural P is difficult. Aquifers in the region are largely hosted in Cambrian bedrock, which hold more P (~2000 ppm) than groundwater (~ 0.5-1.6 ppm), and surface water (<.2 ppm). Sequential extraction demonstrates that P is bound with Fe-Mn oxides, which suggests that anoxic conditions in aquifers could lead to the influx of P from Paleozoic bedrock. Bedrock derived P may lead to elevated concentrations in groundwater, and therefore contribute to lake eutrophication. It is feasible that agricultural P may not be the primary driver of lake eutrophication.

Raymond-Bhatt, Lola

Institution: ***CAN - Vancouver Island University***

Discipline: Public Health

Author/Contributors:
Sarah Sheppard *Kaylie Curtis* *Marni Brown*
Lola Raymond-Bhatt

Abstract Name: Preparedness and Comfort Levels in Providing Sexual Health Education on Vancouver Island

Sex trafficking and sexualized violence are increasing in communities across British Columbia (BC). Sexual health education has been recognized as a powerful tool to prevent children and youth from experiencing these devastating forms of abuse. The question then becomes: who is providing this sexual health education to British Columbian youth, and how well is it being provided? While parents and private consultants often play a role in teaching children the basic concepts involved in sexual health education, the quality and scope of their explanations can vary widely. As such, a key source of sexual health education is teachers in primary and secondary schools. Typically, sexual health education in BC begins in kindergarten and spans through grade ten. While the topic's content is regulated through the provincial curriculum, previous research has shown that teachers are not providing consistent and thorough education. The disconnect between the curriculum and educators appears to be hinged upon two concepts: first, educators themselves do not have enough knowledge on the topics to teach them effectively, and second, educators may not feel comfortable with certain sensitive topics within the curriculum. This project sought to investigate how prepared Vancouver Island teachers-in-training are to teach sexual health education based on their knowledge and comfort levels regarding the curriculum topics. A survey was created with three sections: individual demographics, a curriculum-based knowledge test, and a subjective section focusing on comfort levels regarding various sexual health topics. The survey was open to university students enrolled in the Bachelor and Master of Education programs at Vancouver Island University and the University of Victoria. By examining these future teachers, this project aimed to illuminate how prepared the next generation of teachers are and provide insight into the future of sexual health education.

Razavi, Julia

Institution: ***OH - Miami University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Julia Razavi,
Rose Marie Ward

Abstract Name: What does it take to change? Negative drinking consequences and willingness to change drinking behavior in college students

College student alcohol consumption remains a serious health problem despite frequent intervention and research. Excessive alcohol consumption among college students has been linked to various negative outcomes such as missing class, unsafe sex, accidental injury, assaults, and death (Hingson et al., 2009; White; Hingson, 2014). In a study of college students, more than half of alcohol drinkers report having a negative alcohol-related consequence in the past 12 months (Patrick et al., 2020). Despite these negative outcomes, college students continue to drink. These findings raise the question of what it takes for college students to change their drinking behaviors. There is evidence that college students do not always consider the consequences of drinking alcohol to be negative (Mallett et al., 2008). Since the interpretation of alcohol-related consequences varies, their impact on future drinking behavior may vary as well. This study aims to examine the relationship between the frequency of negative outcomes and willingness to change drinking behavior among college students. An online survey is in progress to collect health data from a mid-sized midwestern university. The survey will include the Young Adult Alcohol Problems Screening Test (YAP) and the Readiness to Change Questionnaire (RTC). It is expected to find associations between certain negative outcomes and readiness to change drinking behavior. Determining what specific negative consequences and what frequency of negative consequences impact readiness to change drinking behavior will help predict future drinking behaviors in college students with negative alcohol-related outcomes. Implications will be discussed.

Recinos, Annabelle

Institution: *CA - California State University - Fullerton*

Discipline: Chemistry/Materials Science

Author/Contributors:
Annabelle Recinos *Pratanu Ghosh*

Abstract Name: **Computation and Variation of Corrosion Initiation Time of Zeolite-Based HPC Mixtures**

The U.S. report card on bridges, conducted by the ASCE (2021) found that 7.5% of all the nation's bridges are structurally deficient, and approximately $125 billion is required for the rehabilitation of those structures. Without adequately functioning bridges, economic losses could be devastating. Corrosion of the reinforcement is one of the main concerns of the service life of reinforced bridges, as it can weaken the strength and durability of concrete. This research aimed to create a reliable and robust corrosion initiation model for reinforced concrete structures – from initial placement to when the corrosion process starts. Current models have limited resources for new durable, and sustainable cementitious materials and rebars.This study's factors of interest were rebar type, initial surface chloride concentration, cover depth, water-cement ratio, and percent replacement of cement. This research implemented the commonly used deterministic model, based on Fick's second law of diffusion, while including sustainable supplementary cementitious materials (SCM) and high-quality rebars. Ternary and binary-based high-performance concrete (HPC) mixtures were designed. Zeolite was used as the primary SCM in this study for its sustainability and availability on the west coast of the United States. In addition, fly ash, slag, silica fume, and metakaolin were used as other SCMs. Three resistivity testing devices measured the electrical resistivity of concrete as the durability of the HPC mixtures against corrosion. This data was then analyzed with the Nernst-Einstein equation and Fick's second law of diffusion to obtain the initiation time.This study showed accurate results for ideal concrete in low-corrosive environments. However, the inclusion of various SCM in HPC and the high-quality rebars in the model provided very high initiation times. This study shows promise in aiding research in enhancing corrosion initiation models in the step toward probabilistic modeling and the inclusion of durable and sustainable materials.

Recio, Sofia

Institution: *IL - Northeastern Illinois University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
June Terpstra,
Sofia Recio

Abstract Name: **Exploring The Impacts Of Policing on Transgender Women In Chicago**

Transgender women are marginalized and often rejected by families, possible employers, and society in general.Stigma in society is pervasive and adversity experienced by transgender (trans) women often comes in the form of being mistaken for sex workers or actually being arrested as sex workers by police. As a result, transgender women are often wrongfully accused of sex work and incarcerated at disproportionate rates compared to the general population. Policies designed to prevent discrimination against transgender women, such as Chicago's Transgender Intersex Gender Nonconforming (TIGN) policy, are often not implemented. This qualitative study seeks to explore the effects of police discrimination and brutality against transgender women who are mistaken for or actually working as sex workers. Semi-structured, individual interviews will be conducted with a purposive sample of transgendered women. Intersectional Framework analysis will be used to identify key themes, patterns within themes between participants, and patterns across themes among participants. This data will provide the foundation to support the development and implementation of policies within law enforcement to reduce with the goal of preventing discrimination against transgender women and other marginalized populations.

Redden, Katherine

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Katherine Redden *Benjamin McManus*

Abstract Name: **Specific Work Organization Factors and their Relationships to Surgical Resident Fatigue**

Fatigue is a multidimensional construct encompassing physical and mental exhaustion with consequences ranging from impaired work performance to adverse driving outcomes. Workers in certain fields may be at high risk for negative outcomes associated with fatigue. Surgical residents specifically are at risk due to their schedules and training requirements. Previous literature has demonstrated certain job characteristics have affect fatigue, but specific work organization factors have yet to be examined in this population. Eleven surgical residents (Mage = 28.89 years, 64% female, 82% White) reported daily work organization factors (call type, number and duration of surgeries) and fatigue measured by the Daily Fatigue Impact Scale for approximately a week (Msurveys = 5.37). Residents reported how routine and ambiguous their day was and wore actigraphy devices measuring physical activity. A linear mixed regression indicated longer time in surgery, higher ambiguity, and being on 24-hour call were significantly associated with higher daily fatigue, while increased years in residency and greater percentage of time laying were associated with lower daily fatigue. Interventions regarding resident fatigue are commonly discussed in the occupational health and safety literature, primarily in the form of duty hour limit recommendations. These findings suggest considerations beyond time working are needed to address fatigue. To reduce fatigue, daily work experiences must be taken into account. This project's findings support further research into work organization factors and interrelationships among these factors and fatigue. Furthermore, a literature search exploring the existing interventions determined that "microbreaks" may be effective in reducing fatigue caused by amount of time in surgery. However, interventions that target other specific predictors of fatigue (e.g. ambiguity) have yet to be employed. Interventions designed to reduce fatigue should integrate work factors such as ethical, scheduling, instructional, and procedural ambiguity into recommendations.

Reddy, Chaitrali

Institution: *IA - Wartburg College*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Zefanias Ngove *Gretchen Guetzlaff,*
Chaitrali Reddy *Dr. Sean T Coleman*

Abstract Name: **Isolation, Characterization, and Host Range of Novel Microbacterium foliorum Bacteriophages**

Bacteriophages are viruses that thrive by infecting bacteria, using the host to replicate, and ultimately killing the host. Bacteriophages are essential viruses, and they can be found in different ecosystems and living organisms. Studies on bacteriophages have shown that these organisms have the potential to treat antibiotic-resistant bacteria, given their ability to infect and disrupt a variety of bacterial cells.3 Phage therapy has been a subject of interest in the medical field since the end of WW2, and clinical trials are being conducted to further understand the phage's antibacterial properties. This research focused on bacteriophage isolation, identification, and a host-range test. DNA extraction and sequencing were performed on three out of five phages, and transmission electron microscopy was also performed to identify the family type to which all five phages belonged. Since the phages were collected from different places, upon their successful isolation and purification, their lysates were diluted to the same titers for the host range test to reveal each phage's potential to infect different Microbacterium species, Staphylococcus epidermidis, and Escherichia coli. We found that the five phages have differing host ranges; some also infect S. epidermidis. Genome annotation of the phages Cedar Bank, Extercus, and Guetzie will reveal further information on why each phage has its unique host behavior toward different Microbacterium. Furthermore, genome annotation will also be used to analyze the spike protein, which allows the phages to adsorb to their host species. The genomes of the Microbacterium species will also be compared to elucidate what makes some species more susceptible to different phages, in this case, the Cedar Bank, Extercus, and Guetzie. Further testing is still needed to determine the isolated phages' potential uses.

Reddy, Rohit

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rohit Reddy

Abstract Name: **The Effects of Poor Maternal Care on the Midcingulate Cortex and Social Behavior in Offspring**

Evidence from the literature suggests that early life stress (ELS) like social isolation causes prolonged biochemical and behavioral changes in social animals and their offspring. The midcingulate cortex (mCg) is an important brain region heavily implicated in cognitive control and social behavior, but the impacts of ELS on this region remains unknown. Thus, our hypothesis is that poor maternal care will disrupt the development of circuits involving the mCg by inducing an increase in the inhibition of the mCg and leading to behavioral deficits later in life. Using a mouse model, nulliparous female mice were raised in social or isolated settings for three weeks, and bred to produce offspring. The offspring underwent a social conditioned place preference (social CPP) test to measure behavior related to social reward during infancy (postnatal day 23), followed by immunohistochemistry testing for c-Fos and GABA in the mCg. Our data indicated that social isolation in dams failed to produce significant behavioral deficits in social CPP in the offspring. Interestingly, the data showed there are significantly higher numbers of GABAergic neurons present in male stressed offspring, suggesting that poor maternal care may accelerate the maturation of the inhibitory system in the mCg. Since we did not observe changes in social behavior at this age, this effect in the mCg may increase vulnerability to behavioral deficits later in life. This study can provide insights towards understanding the impact of poor maternal care in the development of neural circuits relevant for cognition and social behavior.

Reed, Jaeger

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: Biology

Author/Contributors:
Robert Smith,
Matthew Wiedeman,
Jaeger Reed,
Kristina Timmerman

Abstract Name: **The Non-native Australian Pine (Casuarina equisetifolia) does not Appear to Affect Plant Species Diversity**

Australian pine (Casuarina equisetifolia) is an invasive plant species in many tropical and subtropical environments. This species is reported to accelerate erosion and limit native plant diversity. Therefore, we were interested in the plant diversity under the canopy of pines on San Salvador Island, Bahamas. We hypothesized that there would be a relationship between plant diversity and association with pine groupings. We predicted that Australian pine would reduce plant diversity under its canopy. Data was collected between 9 – 11 March 2022. San Salvador is a small island, so we divided it into six zones and randomly selected two pine trees in each zone. We paired each experimental plot with control plots (a plot with no Australian pine) by walking in a randomly selected direction away from the pine plot and collecting the same type of data at that plot. Plant species were recorded under pine canopy and in the similar sized control plots. Data analysis suggests no significant reduction of species diversity under the canopy of the pine in comparison to the control locations ($\chi 2=0.09$, df=1, $p=0.76$). This was a surprising outcome and could be a function of variable soil nutrients and a lack of allelopathy by the pine (which has been reported in earlier documents). Future studies should also consider nutrient content of soil, amount of solar influx, and distance to salty or saline water. This study can provide further insight into the effects of Australian pine as an invasive species as well as invasive plant species in general.

Reeder, Samantha

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Nicholas Biehn,
Bethany Hanak,
Samantha Reeder

Abstract Name: **The effects of arbuscular mycorrhizal fungi on plant defense in Nicotiana rustica in response to simulated herbivory**

Plants have evolved various techniques by which they protect themselves from herbivore damage. In developing these defense mechanisms, plants allocate resources away from growth to increase chances of survival. In effort to compensate for this distribution of resources, studies have shown that plants can enlist the help of arbuscular mycorrhizal fungi (AMF), a mutualist that penetrates roots and exchangesinorganic nutrients for sugars. Prior research has indicated that under certain conditions both growth and defense increase inAMF-inoculated plants.Nicotiana rustica is one species that is associated with AMF. This tobacco species possesses both physical and chemical defenses, primarily in the form of trichomes and the alkaloid, nicotine. Through inoculation of this tobacco with AMF, we can investigate the mutualists effect on growth and defense mechanisms. In thisgreenhouse experiment, we will be looking at the effects of inoculation timing coupled with simulated physical herbivory.Plant mass measurements will betaken72 hours post herbivory. Nicotine levels and trichome density will be analyzed on select leaves of each treatment group. Based onprevious research, we expect to see increased defense in all herbivore damaged plants as well as heightened growth in all AMF inoculated plants. Higher levels of defense will be shown in all damaged inoculated plants, with the greatest levels seen in plants inoculated post germination.

Reesman, Rachael

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Rachael Reesman,
Winnifred Bryant

Abstract Name: **Treating MCF-7 Human Breast Cancer Cells with Bisphenol A to Examine Effects on Inflammatory Pathways**

This project aims to examine the effects of the environmental estrogen, bisphenol A (BPA), on inflammatory pathways in human breast cancer cells. Environmental estrogens are found in a wide variety of plastics, food, and pesticides, so there are human health implications for studying the link between environmental estrogens and cancer cell inflammation and growth. Environmental estrogens mimic the effects of estradiol (E2) as they interact with the same receptor proteins. These interactions cause growth, differentiation, and proliferation in their target cells. One pathway that plays a regulatory role in inflammation-associated cancer development is the Mitogen-activated Protein Kinase pathway (MAPK). The MAPK pathway is activated by chemical messengers, which can include E2 or environmental stimuli. These stimuli activate regulatory proteins that mediate cell growth, differentiation, and proliferation. We are curious if BPA acts as an activator of the MAPK pathway specifically in cancer cells. To study this, MCF7 human breast cancer cells were cultured, treated with BPA, and lysed. The protein content was collected, quantified, and analyzed using Human Cell Stress Arrays. Upon comparing cells that received BPA treatment to cells with no BPA treatment, we will be able to see differences in the inflammatory response due to BPA exposure.

Reeves, Hannah

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Miranda Olvera,
Emma King,
Hannah Reeves

Abstract Name: **Adult Perception on Outcomes of Child Custody Cases**

Custody cases are meant to find the best possible option for the child, the process the child experiences lead to negative mental developmental outcomes.Throughout the family court process the families often face challenges that may consist of stress, role confusion, financial struggles, depression, anxiety and many transitions and changes to their everyday lives. One major obstacle for many families that have to deal with family court orders are the financial overloads placed on families. Private information often causes tension in families and households. This mixed methods study focuses on adults who have experienced a child custody case at any point during their childhood using a pre-developed Perception Survey. The survey consisted of 15 questions including demographic, multiple choice and open ended. Twelve articles were reviewed by the student researchers focused mainly on parental alienation, including factors associated with child custody cases and family court proceedings and how they affect the child involved.The student researchers used the literature review to aid in developing their research. This exploratory study explores the effects of child custody cases on mental development of children. The student researchers plan to study the impact of child custody cases by identifying the mental development outcomes of adults, who were a part of a child custody case. The student research group developed the following research question: (1) What are the mental development outcomes of children who were part of a child custody case? The study includes participants older than 18, who were involved in a child custody case when they were under the age of 18. Through purposive sampling, the researchers survey 75 participants to gain a better understanding of their perception of their childhood experiences during their child custody case.

Reeves, Tania

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
KC Morgan,
Dayja Palma,
Shailyn Kendrick-Dickerson,
Tania Reeves

Abstract Name: **Sustainability of Resources for College Food Pantries**

Over 40% of college students are food insecure. Students in need are 43% more likely to fall behind in classwork and drop out of college. Students with food insecurity are also more likely to develop severe mental health conditions like depression, anxiety, low self-esteem, and loneliness. This study seeks to explain what factors contribute to sustainability of resources in university food pantries. The purpose of sustainability research is to find new and efficient ways to meet the needs of students who are food insecure in college. The student researchers explore the issue of sustainability of resources within college settings and how it impacts the resources obtained by grants and donors. The student researchers developed the following question: What are the factors involved in the sustainability of resources within college food pantries? The student researchers used 16 scholarly journal articles to inform their research on the factors that contribute to the long-term sustainability of food pantries in institutions of higher learning. Researchers using purposive and snowball sampling to identify a minimum of 100 participants with the help of the public directories to complete the questionnaire.The student researchers identified three common concepts within articles: factors of sustainability of food pantries, barriers and obstacles to successful food pantry use, and pantry development. The information gathered from the articles assisted the student researchers in question development for their survey.This research aims to identify the factors in sustaining a college food pantry through increased use. This information is important in attaining the researchers' overall goal of aiding the Tarleton Purple Pantry in developing a plan to sustain resources through Tarleton State College's rapid growth in enrollment.

Regalia, Destiny

Institution: *MN - University of Minnesota - Rochester*

Discipline: Education

Author/Contributors:
Destiny Regalia *Safa Sheikhibrahim* *Xavier Prat-Resina*
Cassidy Terrell

Abstract Name: **Roadmaps of Biochemical Knowledge: Analyzing Neural Networks of Nucleic Acids and Protein Structure Formed by Undergraduate Chemistry and Biochemistry Students**

Undergraduate biochemistry is an upper division course that can be difficult to understand, as it heavily relies upon visual representations. Improving students' ability to understand visual representations and incorporating this with content could aid in assimilating new information into pre-existing frameworks. Students form neural networks after observing visual representations, connecting topics with one another. As of now, there is little research regarding how students interpret biochemistry visuals or store the information they decode in their memory. There are also very few tools that allow researchers to assess students' neural networks, or how they organize the information they extract from visual representations. A study was conducted in an undergraduate general chemistry course where students ranked the relatedness of words and phrases to measure students' neural networks. This study created a similar instrument that measures students' organization of nucleic acid information. Rather than using words and phrases, students ranked the relatedness of biochemical representations. This study aims to determine if students' neural networks become more expert-like regarding nucleic acid vertical translation visual literacy skills as they progress through a sequential chemistry and biochemistry curriculum. In addition to nucleic acids, a sister survey was deployed for analyzing protein structure representational schemas. We analyzed data with Pathfinder, a tool that provides qualitative and quantitative aspects of students' neural networks, relative to an expert referent network. The quantitative data include eccentricity, neighborhood similarities, coherency, degree values, and path length correlations. These values allow us to quantitatively compare student organization of knowledge with expert neural networks. We also qualitatively analyzed images of the neural networks of students by identifying patterns and similarities with expert neural networks to identify chunking of knowledge in relation to the biochemical representation employed. Our findings may allow educators to better develop their courses for optimal student learning and retention of

Reguilon, Antonio

Institution: *WI - St. Norbert College*

Discipline: Physics/Astronomy

Author/Contributors:
Antonio Reguilon,
Erik Brekke,
William Berthard

Abstract Name: **A low-cost confocal microscope**

We demonstrate a simple and cost efficient scanning confocal microscope setup for use in advanced physics laboratories. Designed from convenient commercial products, the implementation of a 3D printed flexure stage allows for further cost reduction and pedagogical opportunity. Experiments exploring the thickness of a microscope slide and the surface of solid objects with height variation are presented as foundational components of undergraduate laboratory projects, and demonstrate the resolution of the setup on the micron scale. This system allows observation of key components of a confocal microscope including depth perception and data acquisition via transverse scanning, making it an excellent pedagogical resource.

Rehwinkel, Philip

Institution: *PA - Swarthmore College*

Discipline: Mathematics

Author/Contributors:
Mengyuan Yang,
David Yang,
Philip Rehwinkel,
Ian Whitehead

Abstract Name: **Circle Packings from Tilings of the Plane**

Any circle configuration has a tangency graph, with a vertex for each circle and an edge for each tangency between circles. The well-known Apollonian circle packing can be constructed from a set of four base circles and a set of four dual circles, each of which has tetrahedral tangency graphs. The orbit of the base circles under the group generated by reflections through the dual circles is the packing, an infinite fractal set of circles.In general, one can start with a finite set of base circles whose tangency graph is the graph of any polyhedron and a finite set of dual circles whose tangency graph is the graph of the dual polyhedron. The orbit of the base circles under the group generated by the dual circles is known as a polyhedral packing, defined by Kontorovich and Nakamura.We study packings which originate from infinite configurations of base and dual circles, a further generalization. We introduce a new class of fractal circle packings in the plane and discuss its relation to crystallographic and Klenian circle packings. The existence and uniqueness of these packings are guaranteed by infinite versions of the Koebe-Andreev-Thurston theorem.The three main circle packings we study are the triangular, square, and hexagonal packings. We focus on their arithmetic properties--integrality, super-integrality, and quadratic and linear forms. We also give a broader class of examples (trapezohedron, cupola, and anticupola circle packings), with a focus on symmetries. We prove structure theorems which give a complete description of the symmetry groups for these packings and show that all 17 wallpaper groups appear in the symmetry groups of our packings. The infinite circle packings we study may reveal number theory and group theory properties of great interest, which remain to be further explored.

Reich, Kaden

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kaden Reich,
Deidra Gerlach,
Connor Dolan,
Cole Birch

Abstract Name: **Synthesis of the Asymmetric Tridentate PCN Ligand and Derivatives for Organometallic Catalysis**

Catalysis plays a significant role in the world today within the polymers industry. Linear alpha olefins (LAOs) are short to long carbon chain molecules that are produced via selective polymerization of ethylene via transition metal catalysts. LAOs have an extensive outreach of uses in the industry, primarily in high performance plastics, motor oils, and synthetic lubricants. This project aims to develop a viable synthetic route to produce a ligand that can direct a metal complex to selectively catalyze the formation of LAOs. The ligand is labeled as a PCN-type ligand by the three elements that coordinate to the metal, phosphorus, carbon, and nitrogen. Our PCN ligand features a benzimidazole central carbene with asymmetrical opposing pendent arms featuring an imine and phosphine. Through a multi-step synthesis process using a combination of open-to-air and air-sensitive techniques, the pre-ligand has been verified and initial investigation into the isolation of metal complexes which are the pre-catalysts is underway. Presented here are the synthetic steps of this project to obtain the free pre-ligand, characterization of the molecules along this synthetic process, the crystal structure of a precursor molecule, computational analysis of predicted ideal complex geometries, and preliminary data on the properties of the target organometallic complexes. Structures of the pre-ligand have been verified using 1H-NMR, FT-IR and single crystal XRD. Future work will investigate the properties of the organometallic complexes of first-row transition metals and the catalytic ability for the selective formation of the desired LAOs via the PCN organometallic complex.

Reid, Chyanne

Institution: *WV - West Virginia University*

Discipline: Nursing/Health Science

Author/Contributors:
Chyanne Reid,
Faezeh Moakedi,
Rawaa Aljammal,
Thamaraiselvi Saravanan,
Visvanathan Ramamurthy

Abstract Name: **Lipid Modification of Cone Phosphodiesterase is Crucial for Color Vision**

Our vision is a vital part of our lives, but for some people that is not the case, disorders like achromatopsia cause color blindness and a lack of visual acuity. Color blindness occurs due to defects in the function of cone photoreceptor cells present in the retina. Cone photoreceptors mediate daytime and color vision and are compartmentalized with an outer segment and an inner segment. The outer segment is the light sensing organelle, and the inner segment is the part of protein synthesis. Thisresearch investigates the mechanisms behind achromatopsia related mutation leading to a loss of lipid modification in the protein cone Phosphodiesterase (PDE6). Our lab created a mutant mouse model modeling the mutation observed in humans, to address why a defect in cone PDE6 lipid modification causes impairment in cone photoreceptor function. We performed electroretinography (ERG) to test the photoreceptors' response to light. The ERG results showed that the cones in mutant mice were not functional, phenocopying the observations from human patients. To determine if the cone PDE6 protein was still being expressed in the mutant, we performed immunohistochemistry on retinal sections, which is a process to selectively identify proteins within a tissue sample. Our data showed that the mutant cone PDE6 protein is produced in the inner segment but is not localized or trafficked to the outer segment. Altogether, our findings show that the lipid modification of cone PDE6 is essential for its localization in the cone outer segment where it is required for cone-mediated vision. Our findings provide a mechanism to understand humans afflicted with PDE6 related color blindness.

Reinoso, Anel

Institution: *IN - Indiana University Purdue University Indianapolis*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Anel Reinoso,
Ian Webb,
Melanie Cheung See Kit

Abstract Name: **Conformational Characteristics of Beta-Glucocerebrosidase and Alpha Synuclein Through Ion Mobility-Mass Spectrometry**

Gaucher's disease is a lysosomal storage disease characterized by three types in terms of severity. The current literature for Gaucher's disease indicates that there is an important missing understanding of how GCase interacts with ASyn. If there are significant structural relationships between GCase and ASyn, then those structural differences will be recorded and indicated in ion mobility-mass spectrometry by their overall shape/size and charge states. GCase and Asyn will be measured using IM/MS (Ion mobility-mass spectrometry), GCase will be produced via in-lab protein expression with E. coli. The primary focus will be on mobility and charge measurements to investigate the structures of the proteins and changes when they interact through ion mobility-mass spectrometry. Currently, this research has been focused on effectively producing the GCase protein through E. coli expression as the expression of the GCase protein is expensive and inefficient; preliminary results show that through a gel testing the expression of GCase, the most expression of GCase is at 18 hours for 0.1, 0.5, 1, and 5 mm IPTG for cultures grown at 30 and 37 degrees Celsius. This research seeks to provide structural and binding insights into the relationship between the two proteins with IM/MS.

Rellinger, Britton

Institution: ***GA - Kennesaw State University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Britton Rellinger *Colton Sheetz* *Jacob Fanno*, *Christopher Staples* *Gerald Mangine*

Abstract Name: Acute Effect of a Pre-Workout Supplement on Power Expression and CrossFit? Workout Performance

A common CrossFit® (CF) workout structure is to have trainees complete the same circuit of exercises for 'as many repetitions as possible' (AMRAP) within a given duration. Performance is dependent on sustaining the power needed to complete each movement at a pace that also minimizes breaks due to fatigue. This ability is known to improve with training and CF experience. However, several individual nutritional ingredients are known to impact energy availability and/or assist with fatigue management, and these may collectively be found in a variety of pre-workout formulations. Thus, supplementing with a pre-workout formulation may provide a greater benefit to AMRAP performance than training and experience alone, but no study has investigated the acute effects of such formulations in experienced CF trainees. Therefore, the purpose of this study is to examine the acute effects of a pre-workout supplement on power expression and CF workout performance. Healthy, CF experienced (≥2 years) men (ages 18-45) are being recruited for this cross-over design, placebo-controlled study. After providing their written informed consent, participants must complete four, weekly experimental visits at approximately the same time of day in randomized order. Upon arrival, they are asked to consume either a pre-workout supplement (S) containing ingredients known to improve energy availability and manage fatigue, or non-caloric placebo (P). Then, they rest 40 minutes before completing either a 5- or 15-minute AMRAP of 9-calorie rowing, six 95-lbs. barbell thrusters, and three 24-in box jumps. Power expression will be measured during each set of rowing via the ergometer's microcomputer, and during each thruster (by PERCH; a barbell tracking camera) and box jump (by in-ground force plates) repetition, and these will be averaged across each round.Comparisons will be made between S and P, 5- and 15-minute trials, and their combinations on changes in power expression across each round completed.

Remick, Jason

Institution: ***MA - Bridgewater State University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Erin Eichinger, *Jason Remick*

Abstract Name: How Women Communicate and Fulfill Sexual Desires

Sexual desire has been recognized as the most universally experienced sexual response by men and women (Regan; Atkins, 2006), while also being one of the most subjective aspects of human sexuality (Mark et al., 2009; Meana, 2010). However, most of the research on sexuality is from a narrow lens that rarely highlights the positive aspects of women's sexual pleasure and desire (Jones, 2019). Additionally, there is no consensus on how to properly conceptualize and operationalize women's sexual desire (Brotto et al., 2009; Meana, 2010). Past research has assumed that women's sexual response cycle, and the ways they experience desire were identical to men (Brotto et al., 2009). Therefore, much of the research on sexual desire is through a heteronormative, male-centric lens, placing an emphasis on behavioral and physiological arousal responses to sexual desire. This has created a gap in the literature where women's individual and complex experiences with sexual desire may be overlooked or dismissed (Chivers; Brotto, 2017; Meana, 2010). Additionally, there is scant research on how women communicate desire to partners, which may be important in understanding how and if desires are fulfilled. The present study aims to understand women's lived experiences with desire through qualitative interviews. We are recruiting a diverse sample of 20-25 self-identified women.Using semi-structured interviews, women are beingasked about theirexperiences with sexual desire and the ways in which they communicate and fulfill desires. Through a feminist lens, we will be using thematic analysis to interpret the data. This study aims to offer new insights into women's desire and combat stigmatization around women expressing their desires.

Reppmann, Tony

Institution: ***IL - Trinity Christian College***

Discipline: Philosophy/Religious Studies

Author/Contributors:
Tony Reppmann

Abstract Name: Feels Good, Man: Internet memes in the history of artistic reproducibility

In mid-2006, a collection of webcomics appeared featuring multiple characters including a frog and a dog. The plotlines are simple: Each of the uncolored MySpace panels contains its own simple plot line; in one the frog goes to the bathroom; the dog asks him why he does it. “Feels good, man,” he carelessly replies. But it is this particular, harmlessly lewd panel that has transformed, first into one of the earliest broadly recognizable Internet memes (Pepe the Frog), which has since been changed yet again into a racist and anti-Semetic symbol that its initial creator had never intended or imagined. All was made possible simply by a subversive reproducibility that both indelibly marks memeology and falls perfectly into historical context when placed in the history of artistic technologies.Philosopher and cultural critic Walter Benjamin (1892 – 1940) in his essay “The Work of Art in the Age of its Technological Reproducibility” theorized that different forms of art have their identities characterized by how easily replicated they are. This nature extends to their function: Just as the invention of film did away with the rare uneditedness of live theater, so too does the very nature of a meme distinguish it from its author’s intent. While I rely on Benjamin’s analysis, I also expand his account in two ways: by explicitly establishing how he sees a historical trend in the reproducibility of works, and by exploring the medium of internet memes as the logical conclusion of the processes that Benjamin first observed. Although Benjamin was not able to experience Internet culture himself, his analysis of the social impact of media transformations anticipated the tribalized fracturedness we now regularly experience through Internet communication.

Resendiz, Dulce

Institution: ***IA - Iowa State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Dulce Resendiz

Abstract Name: Manufacturing A Transparent Solution To Understanding Blast Trauma On The Ears

Numerous studies reported Poly Lactic Acid (PLA) as the most transparent and biodegradable polymer; however, further studies on PLA’s diverse visibility and flexibility are needed when manufacturing a transparent product. This study aimed to test the visibility and flexibility of 3D-printed PLA polymer ears by putting them through a blast wave created by the Oxy-acetylene shock tube to simulate the impact a person's ear could receive when being impacted by a blast. In a biomedical setting, this would allow doctors or researchers to see where the affected parts are and work to improve protection or faster treatment. To achieve this goal, computer-aided design and drafting software (AutoCAD) is used to draft a 3D human replica. Then the replica was transferred to a Raise 3D Pro 2 3D printer to trace the ear path and print it in 3 PLA filament styles, consisting of natural transparent, transparent clear, and crystal-clear. PLA filaments are used because of their flexible similarity to the human ear and transparency, allowing us to view the inside of the ear where the blast took place. Once the printing finalizes, an elasticity test will test the PLA ear’s flexibility and endurance through a pull and stretch procedure. Next, we compare the three PLA filament ears' results to conclude which replica will provide the best resistance when set in a high-tension environment. Subsequently, a residue visibility test performed by an oxy-acetylene shock tube blast captured by high-speed digital monochrome cameras tests and identifies where the blast wave impacts the ears. Thus, we can compare which PLA filament ear is better, illustrating the residue left on the ear replica. The current study improves visibility and future waste minimization, which can be incorporated into many industries, such as medical, military, and agricultural product selection when manufacturing equipment.

Rettke, Travis

Institution: *NY - United States Military Academy*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Travis Rettke

Abstract Name: **Remote Control of a High Energy Laser System**

High Energy Lasers (HELs) have become more prominent in defense applications, largely due to more precise, powerful beams that are capable of targeting small and quick moving targets. Typically, these lasers produce infrared light that lies outside of the visible spectrum and have multiple safety requirements that make them difficult to operate without extensive precautions. Due to the limited visual feedback and interaction, attempts to demonstrate the power and capabilities of HELs to observers are often unremarkable. In this work, I aim to address this problem by creating a more effective and satisfying experience of HEL demonstrations. To do this, I built an enclosed HEL control system that is easy to use and provides sensory feedback to the user through tactile buttons and switches. Additionally, multiple LEDs within the system provide visual feedback on the operating state of the HEL, allowing easy understanding. The system utilizes a microcontroller to receive, interpret, and execute commands based on user inputs. The microcontroller is programmed with a simple finite state machine to execute all available functions and communicates using ASCII commands over a serial interface connected to the HEL system. A shield was designed, printed, and mounted to the microcontroller to interface between the hardware inputs on the control panel and the microcontroller's digital inputs. Lastly, the control system is equipped with all necessary functions to operate the laser as well as multiple safety precautions, to include a hardwired emergency stop button.

Reyes, David

Institution: *WI - Milwaukee School of Engineering*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
David Reyes,
Anand Vyas

Abstract Name: **Material Development - Attaining New Properties with Filled Polymers**

This research investigated the effects of adding filler material to Poly Ether Block Amide (PEBA) used in additive manufacturing. Glass bead (GB) filled PEBA composites were produced using selective laser sintering and were subjected to tensile, three-point bend, impact, and hardness testing. The composites tested had 0 wt%, 20 wt%, and 40 wt% GB. The results showed that elongation at rupture, tensile strength, and flexural strength decreased as more glass beads were added to the composite. However, the elastic modulus increased as with the addition of glass beads. Hardness remained invariant with variations of wt% GB. Impact resistance remained inconclusive due to time constraints.

Reyna, Mara Mikaella

Institution: *ND - University of North Dakota*

Discipline: Nursing/Health Science

Author/Contributors:
Mara Mikaella Reyna,
Colin Combs

Abstract Name: **Effects of caffeine and dbcAMP on expression of a vimentin-RFP reporter gene in human breast carcinoma MDA-MB-231 spheroid cells**

Breast cancer is the most prevalent type of cancer worldwide and the leading cause of cancer-related mortality. This study focuses on triple-negative breast cancer, which currently lacks a focused treatment option. The vimentin gene is an important marker of epithelial-to-mesenchymal transition (EMT) and is increased in tumor progression and implicated in cancer metastasis. To study the regulation of EMT, we developed a 3-dimensional (3D) cell culture model using the triple negative breast adenocarcinoma cell line, MDA-MB-231. More importantly, we used a specialized MDA-MB-231 (ATCC HTB-26) reporter cell line in which the vimentin protein has a C-terminal red fluorescent protein (RFP) tag that allowed us to track gene expression in vitro. We hypothesized that 3D cell culture would promote a mesenchymal phenotype characterized by increased vimentin-RFP expression compared to 2D cell cultures. In addition, we predicted that culture treatments with either 100 μM dibutyryl cyclic adenosine monophosphate (dbCAMP) or 100 μM caffeine to stimulate the cAMP/PKA signaling response would attenuate the 3D culture-dependent increase in vimentin-RFP. As expected, 3D cultures had increased vimentin-RFP compared to 2D cultures. Treatment of the 3D cultures with dbcAMP but not caffeine significantly decreased vimentin-RFP expression. These findings demonstrate that dbcAMP is effective in attenuating a marker of mesenchymal transition associated with tumoroid 3D culture growth and suggest that interventions targeting cAMP-dependent signaling may be useful as adjunct drug interventions for reducing triple negative breast cancer metastasis.

Reynolds, Karen

Institution: *IA - Dordt University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Karen Reynolds,
Gretchen Stennett,
Manuela Ayee-Leong

Abstract Name: **Computational Analyses of Myelin Protein Zero Interactions: A Data Science Approach**

Charcot-Marie-Tooth disease, the most common progressive hereditary neurological disorder, presents with symptoms such as muscle weakness and wasting in the hands or feet. Experiments have shown that these conditions correlate with the collapse of myelin sheaths in peripheral nerves. The molecular mechanisms for these symptoms is poorly understood, however one current hypothesis is that point mutations of Myelin Protein Zero (MPZ), the most abundant protein in the myelin sheath, may result in differing interactions with other MPZ proteins and neighboring membrane lipids. Our current research seeks to investigate this hypothesis by computationally probing the interactions between wild-type and select mutated forms of MPZ using molecular dynamics simulations. Specifically, we utilize coarse-grained simulations using the MARTINI forcefield to model multicomponent membranes containing MPZ in apposing bilayers. To compute the time- and spatially-averaged frequency and longevity of direct interactions between MPZ molecules in apposed lipid layers, we use coordinate positions generated from several microseconds of simulation time. Preliminary results from our simulations indicate differential interaction regions between MPZ proteins in apposing layers in wild-type verses mutated forms. Additional analysis may provide further details into the molecular mechanisms by which point mutations of MPZ disrupt myelin integrity.

Reynolds, Molly

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Molly Reynolds

Abstract Name: **Investigating Regulatory Mechanisms of Gap Junction Molecule innexin-19 in Neuronal Maturation**

While molecular mechanisms controlling early neurodevelopmental events like neuronal specification and migration have been the focus of much research, the molecular mechanisms controlling the maturation of the post-mitotic nervous system from birth to adulthood are not well understood. Electrical synapses are composed of gap junctions, created from connexins in chordate and innexins in non-chordate animals. Although the dynamic developmental expression of connexins/innexins have been suggested to play important roles in post-mitotic brain maturation, the mechanisms by which they control neuronal maturation and by which their dynamic developmental expression is regulated are largely uncharacterized. We used Caenorhabditis elegans (C. elegans) as our experimental model due to their stereotyped and fast developmental cycle, invariant cell lineage, and the ability to identify the expression pattern of any molecule in the entire nervous system to single neuron resolution. First, we characterized the downregulated expression pattern of inx-19, a gap junction channel, across post-embryonic development in single neuron resolution. Next, we investigated a heterochronic pathway regulator, the lin-14 transcription factor, as a candidate regulator of dynamic developmental inx-19 expression. lin-14 is important in promoting immature neuronal state in early C. elegans larval stages, and the downregulation of lin-14 expression is important for the maturation of certain neuronal phenotypes. We examined whether developmentally-regulated inx-19 expression was altered in lin-14 null mutants. Additionally, we will be characterizing the role of other members of the heterochronic pathway in regulating inx-19 developmental expression. Future studies will be devoted to determining the behavior and functional roles inx-19 plays in locomotion using the WormTracker. Identifying the regulation and role of inx-19 will allow us to better understand how dynamic gap junction expression across development regulates neuronal maturation, as well as uncover how dysregulation of these mechanisms may govern neurodevelopmental diseases.

Reynolds, Samantha

Institution: *PA - Millersville University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Samantha Reynolds

Abstract Name: **Physiological and Behavioral Effects of Ocean Acidification on Two Species of Intertidal Snail**

Ocean acidification (OA) has been shown to affect organisms that use calcium carbonate to build their shells, such as marine snails. With the excess carbon dioxide in the atmosphere from burning fossil fuels, it reacts with seawater changing the water chemistry. The change in water chemistry increases the amount of bicarbonate and hydrogen ions and decreases the amount of carbonate. Not all calcifying organisms can extract the carbonate from bicarbonate which poses an issue of carbonate availability for shell building. The extra hydrogen ions in the water make it more acidic, which has been shown to cause adverse physiological and behavioral effects on certain calcifying organisms. If the excess hydrogen ions cannot find a carbonate ion in the water to bond with to make bicarbonate, they will bond with the carbonate already in the calcifier's shell, dissolving it. Other effects of OA include decreased shell strength and various reproduction issues. In this study, we will investigate the effects of lower pH on two snail species from Chincoteague Bay, Virginia that play an important role in the bay ecosystem: the common periwinkle snail (Littorina littorea) and the Eastern mud snail (Ilyanassa obsoleta). To determine the physiological and behavioral effects of OA on these two species, live snails and empty snail shells will be exposed to four levels of pH, 8.1 being the control value. Data will be recorded on weight, size, density, appearance, shell composition, shell strength, and movement behavior over the course of approximately five months. The results of this study will showcase how the data might differ between species and the likelihood of survival of these marine snails in an acidic ocean.

Rhoads, Amara

Institution: *MD - Stevenson University*

Discipline: **Nursing/Health Science**

Author/Contributors:
Amara Rhoads

Abstract Name: **Effects of Nutraceuticals on Cardiovascular Health**

Cardiovascular diseases now outrank cancer as the number one cause of fatalities in the United States, with hypertension being the most dangerous factor linked to deaths. Despite medical efforts to develop pharmaceutical interventions to help individuals with cardiovascular disease, adverse side effects can outnumber initial presenting symptoms. In recent years, holistic medicine, also known as nutraceutical interventions, has been more prevalent in research. More specifically, the effects of herbal teas on lowering blood pressure and heart rate have been studied, exhibiting connections between tea consumption and improved heart health. Limited research has examined the effects of both dietary and herbal interventions. The aim of this true experimental, four-group design is to investigate the effects of herbal teas on human interventions, as well as the plausible benefits of the Dietary Approaches to Stop Hypertension (DASH) diet. Eighteen participants from various backgrounds and cultures were placed into either control, dietary intervention, herbal intervention, or dietary and herbal intervention groups. It was hypothesized that if participants implemented nutraceuticals into their daily regimens, they would experience decreased blood pressure, and heart rate, as well as an improved perception of overall personal health. Repeated ANOVAs were run to compare blood pressure and heart rate by week, and blood pressure and heart rate by the group. The results of the ANOVA tests did not show a significant impact on lowering blood pressure or heart rate. Although the data was not significant, participants reported improved health and adherence to daily routines. Additionally, there is qualitative and analyzable evidence to support the use of consuming hibiscus tea as part of a healthy diet. It is recommended that further research be completed to evaluate the plausible effects of herbal interventions on populations who have increased hypertensive risk factors needs.

Rhodes, Bethany

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Danielle Kmieciak,
Lily Boe,
Brayten Casey,
Bethany Rhodes,
Justin Swanson,
Kayla Wylie

Abstract Name: **Role of Motivation on Academic Success B**

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation is and how it impacts the academic success of college students. Factors that will be studied are intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation studens vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions addressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Rhodes, Mason

Institution: *AR - Arkansas State University*

Discipline: Biology

Author/Contributors:
Katherine Willis *Mason Rhodes*

Abstract Name: **Improving Sustainability Awareness with K-12 Citizen Scientists Using Authentic, Interdisciplinary Project-Based Learning to Support an International Space Station Experiment**

Plastic waste disposal is a serious environmental challenge that is important to incorporate into K-12 curriculum. While the 3R's (Reduce, Reuse, Recycle) are commonly taught at this level, empowering K-12 students to contribute meaningful and authentic sustainability research data in efforts to increase awareness is needed. A potential plastic waste solution is Galleria mellonella (waxworm), a common beehive pest that can be easily incorporated into curriculum for K-12 classrooms. Waxworm larvae are capable of biodegrading low-density polyethylene (LDPE) films (e.g sandwich bags) into a reusable product, ethylene glycol. The A-State SPOCS (Student Payload Opportunity with Citizen Science) team was awarded a NASA grant to assess the plastic biodegradative properties of waxworm larvae in a microgravity environment on the International Space Station. A major component of this grant was partnering with Citizen scientists (CS) from two Arkansas K-12 intermediate schools who actively conducted preliminary experiments. Their classroom efforts optimized conditions for waxworm larvae plastic consumption, calculated mortality rates, and established the ability of waxworms to survive on minimal food stocks (beeswax only). CS contributed important data in establishing waxworm larvae' preference for the plastic type, Ziploc. This data was key to the final design of the ISS experiment and will be presented in various outlets. In addition, CS participated in engineering activities utilizing NASA constraints and independently manufactured the 3D-printed waxworm larvae habitats for the project. In July 2022, our team completed a successful launch of the experiment aboard the NASA resupply mission CRS-25. This project highlights efforts in finding innovative and sustainable waste management solutions for long-term space travel as well as bringing authentic, project-based learning opportunities in K-12 to increase awareness of this pervasive environmental problem.

Rhodes, Scout

Institution: *CO - University of Colorado Colorado Springs*

Discipline: Psychology/Neuroscience

Author/Contributors:
Scout Rhodes,
Laith Al-Shawaf

Abstract Name: **Guided by Guidelines or Each Other: Social and Behavioral Mimicry During the COVID-19 Pandemic**

As Coronavirus variants mutate and evolve, it is essential to better understand the psychological mechanisms influencing adherence to guidelines such as social distancing, wearing masks, and other CDC recommended hygienic practices. Previous research suggests that people mimic perceived normative behaviors in the context of the COVID-19 pandemic. The present studies aimed to expand upon the original research by experimentally manipulating different levels of depicted guideline adherence through photographic imagery and doctored statistical polls. We predicted that because people are significantly more likely to mimic perceived normative behaviors, participants would likely adhere to guidelines when witnessing community members engage in similar behaviors. Study 1 was a randomized between-subjects design with one independent variable and four levels consisting of an empty city control, and images with different depictions of mask adherence (i.e., 40%, 70% and 100% adherence). Study 2 was a randomized between-subjects design with one independent variable and three levels consisting of a control graph from the National Highway Traffic Safety Administration, and statistically doctored graphs with varying levels of reported guideline adherence (i.e., 23%, 67%, and 92% adherence to guidelines). Researchers conducted a one-way ANOVA and found no significant effects for exposure to the manipulation and degree of willingness to adhere to guidelines for both Study 1 and Study 2.Keywords: Coronavirus, COVID-19, guideline adherence, social mimicry, social conformity

Ricci, Miranda

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication/Journalism

Author/Contributors:
Miranda Ricci

Abstract Name: **How First-Generation, Low-Income, Historically Underrepresented Students Perceive their Experiences while Pursuing a Graduate Degree**

This study focuses on how current and former McNair Scholars perceive their experiences in college when pursuing graduate school. Students in this program identify as first-generation, low-income, or are from an underrepresented/ historically diverse population, which historically have been underrepresented in higher education and even further underrepresented in graduate programs. There is a need to understand how students from these backgrounds find and utilize support to navigate higher education in pursuit of a graduate program.Through semi-structured interviewing this phenomenological study of current and former McNair Scholars found many forms of support that furthered students' educational goals. These experiences include faculty mentoring, familial support, and programs such as the McNair program. Participants in this study routinely mentioned that on-campus faculty support was crucial to their pursuit of graduate school. This research contributes to the general understanding of these student experiences and provides suggestions for best practices for support programs for individuals in these groups when pursuing higher education and graduate-level programs. These findings identify what current programming is doing to support students from this population in attaining their educational goals. While TRIO programs are benefitting the students they reach, there are more educational gaps that should be remedied. The findings of this study suggest that additional research is needed to better understand what each individual needs to be successful in their educational goals. This study is one step towards understanding the best educational support students who are first-generation, low-income, and historically underrepresented may need through the pursuit of a graduate program.

Ricci, Riley

Institution: *TN - Christian Brothers University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Riley Ricci *Jesse Davis* *Logan Brewer*
Frank Andrasik *Jeffrey Sable* *Helen Sable*

Abstract Name: **SUBDERMAL VERSUS EPIDURAL LONG-LATENCY AUDITORY EVOKED POTENTIALS IN RATS: A VALIDATION STUDY**

Event-related potentials (ERPs) are the summation of postsynaptic activity time locked to a stimulus which are recorded using electroencephalography (EEG). ERP's high temporal resolution reflects complex activation of neuronal networks in relation to particular events or cognitive processes. Notably, they also provide an analogous phenotypic measure between humans and animal models, and thus, are well suited for studying mental disorders and improving the validity of existing psychiatric animal models. Currently, except for auditory brainstem responses, ERP research in rodents has predominantly utilized relatively invasive EEG recording procedures like epidural electrodes. The purpose of this study is to validate the use of less invasive subdermal methods for ERP measurement. 20 adult, male Wistar rats will be implanted with subdermal needle electrodes while anesthetized with continuous isoflurane. Once fully awake, they will then be presented with a passive auditory paradigm consisting of a sequence of 5-tone trains with either 1- or 5- inter-train intervals (ITIs) presented at a frequency of either 8-kHz or 500-Hz. To assess temporal stability, subdermal needle recordings will be conducted twice for both frequencies separated by 2-3 months. Approximately 2-4 weeks following the second round of subdermal needle recordings, rats will undergo a craniotomy to implant skull screw electrodes for invasive recordings. We predict our findings will demonstrate the applicability of a semi-invasive method for recording ERPs in awake rats. Moreover, this work will allow for a better understanding of the comparability of findings between these epidural and subdermal approaches, which is vital to the replicability of findings within and across labs. Overall, this work has the potential to support the validity of an approach for measuring ERPs in awake rats that is less invasive and harmful than most conventional, invasive approaches.

Rice, Elizabeth

Institution: *KY - University of Kentucky*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Elizabeth Rice,
Luke Bradley,
Kayla Horne,
Emily Guerrero,
Jada Covington,
Lordina Mensah,
Alexis Smith,
Andrea Hernandez

Abstract Name: **The Symphony of the Cell: Using Data Sonification to Engage Students in Molecular and Cellular Biology**

As technology advances in all aspects of our lives, the demand for careers in science, technology, engineering, and mathematics (STEM) hasincreased exponentially. However, many students find STEM challenging, and further, lack key experiencesto gain a sense of belongingin STEM and consider pursuing it as a career. Thus, providing STEM learning modules that introduce key concepts while engaging students can make an impact in addressing this need. A particularly difficult topic for students to understand is the relationship between cells and how the sequence and structure of proteins ultimately contributes to their function. In order to introduce these basic principles to introductory students, our team has constructed a virtual authentic-learning tool that utilizes data sonification in which each amino acid in a protein sequence is assigned a musical note and rhythmic value based on its hydrophobicity. This allows a harmonious musical piece to be composed based on the sequence of a functional protein. Disease-associated mutations become disharmonious which allows users to auditorily identify disruptions in a protein sequence and understand how it impacts the cellular symphony. We will present our preliminary survey data supporting our hypothesis that this data sonification learning module helps students gain an understanding of the molecular basis of disease while improving students attitudes towards STEM.

Richard, Brynn

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Dejntxhee Vang,
Brynn Richard,
RaiLynn Barnard

Abstract Name: **Mental Health In Athletes**

Athletes who are in higher education, collegiate athletes, are individuals who can struggle with addressing concerns related to their own mental health. Athletes can develop these ailments due to their environment: self-esteem stigmatization, sport-related injuries like concussions, influences from coaches, their view on social status, and even overtraining. This research examines the effectiveness in outreach programs and the outcomes from having a mental illness as well as correlational factor of stress. In an attempt to analyze athletes and their stressors, a survey was directed to those who participated in sports. The search for a correlation between coaches and causes of stress, questions were asked in a survey related to athlete stress and relationship with the coaching staff. The participants responded with 'probably yes' and 'probably not'. This showed that athletes were prone to facing stress at an average and above-average level. Stressors and rehabilitation in athletes are reported to have been extremely difficult. Results reported back that athletes definitely struggle to reach out to others. The group also searched for solution rates regarding outreach encouragement with peers and coaches. The report shows a vast majority responded that they weren't encouraged by others. The results showed that mental illness is potentially still a hidden topic across the sports world. This study aims to help support the research that collegiate athletes do experience mental ailments and that these ailments are caused by many factors: the responsibilities of training and overcoming challenges, the consequences of injuries, and advice from coaches or peers.

Rickey, Taylor

Institution: *TN - Trevecca Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Taylor Rickey,
Brooke Benson

Abstract Name: **Mindfulness Skills, Emotional Regulation, and Coping Mechanisms as Predictors of Academic Success and Wellbeing**

The goal of this research study was to determine the possible relationship between emotion regulation, coping, and three facets of mindfulness (acting with awareness, nonreactivity, and observing) in predicting perceived academic success and overall wellbeing. “Wellbeing" is a term that is often rated according to someone’s own perception of their mental and physical states. Academic success is determined by the individual’s own perception of what success should look like. Like Finkelstein-Fox et al. (2018) reported, “Understanding students’ intrapersonal resources that promote resilience and protect psychological well-being as they transition from high school to undergraduate life may provide useful directions for campus-based counseling interventions,” (2018, p. 639). Acquiring knowledge surrounding these variables and their relationship to individuals’ wellbeing could create pathways to decrease mental health issues in universities everywhere. The current study was conducted at a small, liberal arts university in the southeast. The Five Facet Mindfulness Questionnaire (FFMQ), a shortened form of the 60-item COPE scale called the Brief-COPE, The Emotion Regulation Questionnaire (ERQ), The Satisfaction with Life Scale (SWLS), and the Academic Self-Perception subscale were administered to 145 undergraduate students with a mean age of 19.52. The results were analyzed using a multiple regression analysis through SPSS. The results of this study revealed that acting with awareness was an overall predictor of overall wellbeing. A second multiple regression analysis revealed that the two variables of coping and acting with awareness were significant predictors of an individual's perception of their academic success. Emotion regulation and two facets of mindfulness (nonreactivity and observing) failed to significantly predict perceived academic success and overall wellbeing. Implications, limitations, and recommendations for future research were addressed.

Riddle, Maddie

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Sociology

Author/Contributors:
Maddie Riddle

Abstract Name: **Risky Behaviors: its Cycle of Victimization Against Women in Reentry**

Women who use drugs and are involved in the criminal justice system have been shown to be at an elevated risk of contracting HIV and other infectious diseases. This is of particular concern among women exiting prison, many of whom face numerous interpersonal and structural challenges upon release. While much of this risk is associated with injection drug use and unprotected sexual encounters, little is known concerning what factors affect the likelihood of engaging in these behaviors upon release from incarceration. Using the Reducing Risky Relationships for HIV (RRR-HIV), the current study examines 346 women who participated in a multi-site randomized clinical trial aimed at reducing HIV risk (and other risky behaviors) upon release from prison.Historically, interventions and prevention programs in prison have fallen short of reducing risk for women. It is a structure built upon a system constructed for white men, and what works for men does not always work for women. This, and the lack of research with reentry women as the subject, allow for the cycle of victimization to continue. This study examined numerous variables (drug use, living situation, abuse, partner satisfaction, race, mental health, perceptions of HIV) which may have an influence on a woman’s likelihood of partaking in risky sexual behaviors. It aimed to identify any potential factors that may have a particularly high risk for women engaging in these behaviors and examine potential intervention systems and prevention programs. Data was collected while women were incarcerated and 90 days following their release from prison. Multivariate regression results indicate that women who reported engaging in post-release drug use and had difficulty finding stable housing were significantly more likely to engage in risky sexual behavior. Policy implications will be discussed.

Riendeau, Liv

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Liv Riendeau

Abstract Name: **The Queer/LGBTQ+ experience within Social Virtual Reality**

Computer mediated communication (CMC) and modern-day social media applications have been an intuitive social space for minority advocacy and outreach for many marginalized groups. In relation to LGBTQ+; Queer individuals, the internet and its digital social spaces have created environments for inclusive activism, educational environments, and safe social spaces for these individuals to inhabit. As social technologies evolve, global interconnection creates new avenues for diverse identities to be represented and represent themselves through a complex, internet-based identity that can, at times, differ from their physical world identity. The aim of this research is to explore how Virtual Reality (VR) technologies and specifically Social Virtual Reality (SVR) applications (like that of VRChat, RecRoom, Meta Horizons, etc.) allow for LGBTQ+/Queer identity exploration on a far deeper level than traditional flat screen digital social spaces. Avatar embodiment, presence within VR (social, self,; world), and a slew of other social and psychological factors, gender/sexuality identity and orientation can be casually explored to profound results. However, since VR and SVR are newer technologies with a niche user base of dedicated enthusiasts, very little research has been conducted on social VR; especially regarding the LGBTQ+/Queer experience within SVR. How does avatar embodiment of a gender affirming digital body effect a trans* users experience within SVR? Does the digital SVR space create avenues for sexuality exploration in an inclusive setting that some individual may otherwise not be able to engage in? Does the SVR platform construct yet another digital space for LGBTQ+/Queer advocacy and representation akin to traditional social media platforms (Twitter, Facebook, etc.)? Finally, is VR, and by extension SVR, real? Do the events we attend, friends we met, and identities we engage with within VR/SVR constitute a genuine reality within a digital format rather than the physical reality we have come to know?

Riggott, Kailianne

Institution: *MI - Hope College*

Discipline: Nursing/Health Science

Author/Contributors:
Kailianne Riggott *Maureen Bishop* *Vicki Voskuil*

Abstract Name: **Evaluating the Differences Between Corewell Health Systems Enteral Nutrition Policies and Exploring Evidence-Based Practice Recommendations**

Adequate nutrition is vital to a patient's plan of care and overall health. Enteral nutrition may be recommended if a patient's nutritional needs are not being met, thus affecting their illness recovery. This project aimed to compare the enteral nutrition policies of two hospitals in a large health system in the Midwest and to explore evidence-based practice recommendations in the literature. Henderson's Nursing Needs Theory provided the foundation for this project, as it describes how individuals have basic health needs and may require assistance from nurses to achieve health, independence, and overall well-being. In addition, the theory's list of basic needs includes adequate nutrition, which, for some, can only be achieved through assistance such as enteral feedings. Multiple search strategies were used to determine adequate literature on the topic of enteral nutrition and best evidence-based practice guidelines. Keywords and phrases used in the search process included 'enteral feedings/nutrition,' 'tube feedings,' and 'alternative nutrition.' Subject matter keywords and phrases included 'systematic review,' 'best practice,' and 'evidence-based practice.' Implementation of Boolean Logic allowed for more concise searching and results. Databases included Primo, CINAHL, Google Scholar, and Elsevier. Inclusion criteria for articles included: 1) published within the past five years; 2) nurse as an author; 3) reputable source; and 4) focus on enteral nutrition. Organizational strategies were used to compare the policies, sorting findings into 'primary' and 'secondary' differences. Three primary differences were discovered for which a literature review of six articles was performed that revealed recommendations on gastric residuals, tube placement verification, and system changes. Limitations included a lack of diverse patient populations in the literature and a time restriction for the project that prevented the analysis of more articles. Overall, by implementing current evidence-based practice recommendations into enteral nutrition procedures, patients' nutritional status and overall well-being will be promoted.

Rigsby, Mikayla

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Mikayla Rigsby *Amber Jones* *Omar Moukha-Chafiq,*
Corinne Augelli-Szafran *Anita Hjelmeland*

Abstract Name: **Determining the Efficacy of a 4'-Thionucleoside Analog in the Sensitization of Glioblastoma Cells to Temozolomide**

The patient prognosis for Glioblastoma (GBM) remains poor, despite an aggressive standard of care. Therapeutically targeting epigenetic mechanisms, such as hypermethylation, may offer improved treatment options for patients. DNA methyltransferases, specifically DNA methyltransferase 1 (DNMT1), mediated hypermethylation of tumor suppressor promoters' results in altered gene expression and consequent tumor progression.. Prior reports determined that pretreatment with decitabine, a potent DNMT1 inhibitor, sensitizes glioma cells to the standard of care DNA damaging agent, Temozolomide (TMZ). Due to the limitations of decitabine, investigators at Southern Research developed 4'-thionucleoside analogs as DNMT1 inhibitors with lower off-target toxicity than decitabine. We hypothesize that 4'-thionucleoside analog will be more effective than decitabine in the TMZ sensitization of glioma patient-derived xenografts (PDX). Jx39P and D456 PDX models were treated over a 7-day period with hypomethylating agents at concentrations spanning 10 nM to 5μM. Upon completion of these treatments, cell viability was assessed using Cell Titer Glo, which measures ATP production. Additionally, Jx39P were pretreated for 48hrs with either decitabine or 4'-thionucleoside analog (200 nM or 30 nM respectively) and then subject to a singular treatment of TMZ (6 μM) followed by viability assessment. The IC50 concentration of 4'-thionucleoside analog was ten-fold lower than that for decitabine for Jx39P and two-fold lower for D456. In Jx39P, both hypomethylating agents in combination with TMZ are effective in reducing cell viability when compared to the treatment groups with single hypomethylating agents. Currently, we are optimizing experimental conditions to better predict the benefit of 4'-thionucleoside analog over decitabine in the sensitization of GBM PDX cells. We intend to determine the efficacy of 4'-thionucleoside analog in GBM PDX models resistant to TMZ, and the impact of both hypomethylating agents on DNA damage and repair pathways. Collectively, our data strongly suggests 4'-thionucleoside analog warrants further investigation as a single anti-GBM agent.

Rioux, Stephanie

Institution: *RI - Roger Williams University*

Discipline: Education

Author/Contributors:
Stephanie Rioux

Abstract Name: **KidWind: Impacts of Engaged, Community-Based Learning on Elementary Education Majors**

Kidwind is an ongoing community-engaged project involving interdisciplinary teams of undergraduate elementary education and engineering students, to plan and implement a unit on concepts of engineering design process and wind energy in local 4th grade classrooms. Occurring over 3 years with separate participant groups, the lesson implementation was completed in person during 2019, hybrid in 2020, and virtually in 2021. As an elementary education student participant of the 2021 session of this study, I have strong interest in the impact that this engaged learning experience had on myself, my peers, and our 4th grade students. This interest led to two research questions: What are the impacts of Kidwind on elementary education majors' engineering teaching practice? How does this impact change depending on the modality of the lesson implementation? Participants completed pre- and post-tests, where the questionnaire items included Likert scale questions focusing on engineering teaching self-efficacy, and short response questions focused on assessing concepts of wind energy, wind turbine blade design, and the engineering design process. The Likert scale items were analyzed using Wilcoxon Ranking system and paired t-tests, and the short response questions were analyzed by identifying major themes that emerged within the participants' responses. The comparison between pre- and post-responses shows an enhanced understanding of wind energy concepts and an increased self-rating on engineering teaching self-efficacy. An analysis of both 2019 and 2021 elementary education participants' short answer responses shows an increase in knowledge of the key blade variables (pitch, size, shape, and number of blades) that affect wind turbines' performance. These findings inform effective engineering teaching approaches through engaging, community-based experiences which are incredibly valuable to learning and confidence for pre-service teachers.

Risen, Katlin

Institution: *CO - University of Colorado at Boulder*

Discipline: History

Author/Contributors:
Katlin Risen

Abstract Name: **Analysis of 1920 Bolshevik Propaganda Posters and the Representation of Women**

This research looks at the various ways in which women were depicted in, or left out of, Bolshevik propaganda posters and society at large in 1920. Class unity was often emphasized over gender relations in Bolshevik ideology and women's movements were often discouraged by the party. This stance differs from the Marxist ideology it originally grew from. The goal of this research is to show how women were viewed by the Bolsheviks, and by society at large, and how this reflected the facts of their place in society. This has been done by analyzing six propaganda posters to see how women were depicted and in what cases they were left out. Through showing this representation, this research highlights the place of women in early twentieth century Soviet Russian society as well as how the Bolsheviks chose to depict and therefore treat these women in society.

Ritchey, Maggie

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Maggie Ritchey,
David Matlaga

Abstract Name: **Poking Around: How does herbivory affect reproductive traits in Phytolacca americana?**

Plants often experience a trade-off when allocating resources for growth, survival, and reproduction. Additionally, herbivory, the consumption of plant materials by animals, can reduce the rate and amount of resources a plant can acquire. This loss of resources due to herbivory might result in plants suffering the cost in terms of reproductive allocation. My research addressed the question of where the balance between the cost a plant suffers from herbivory to theresources it allocates for reproduction. It is my prediction increasing levels of herbivory will have a significant negative effect on the reproductive efforts in Phytolacca americana. To examine these trade-offs, I simulated herbivory onPhytolacca americana in central Pennsylvania on Susquehanna University's campus. Each plant was categorized into three size levels: small, medium, and large. The treatment for the plants consisted of cutting off leaf structures down to the stem. Different treatment levels consisted of 0% leave mass removed, 50% removed, and 100% removed. Pre-treatment, thenumber of leaves and fruit racemes were recorded. Five weeks post-treatment, dead plants were noted as well as the number of fruits, fruit weights, and ripeness,plus the size and number of racemes between the groups. Smaller plants are not as resilient to the treatment and have resulted in numerous cases of extreme wilting or death. There is a correlation in the amount of underripe and overripe fruits between treatment groups.Understanding the interactions between herbivory and resource allocation in plants is important to further the knowledge of herbaceous plant populations as well as exploring the mechanisms in which resource allocation takes place.

Rivas, Sydney

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Sydney Rivas,
Dr. Mary Glover

Abstract Name: **Collection season effects ant diversity**

Ants provide valuable services to ecosystems, aiding in nutrient cycling, seed dispersal, and soil formation. The diversity of ant communities is often used to indicate the overall health of the environment. To explore how human impact affects ant communities on Bowie State University, students in BIOL 102 sampled ants in three locations on campus 1) on campus near buildings 2) at the edge of campus and 3) in the woods on campus. We used DNA barcoding, sequencing the COI gene, to identify the species of ants collected. Overall, 28 ants were successfully sequenced. We found a total of 5 ant species. The most common ant species was Prenolepis imparis, or the winter ant. The ant species diversity was ants collected much lower than the species diversity calculated from the Fall 2021 semester. Our results that the season impacts the diversity of foraging ants, with fewer ant species foraging in cooler temperatures. Ants are ecosystem engineers, providing many important functions. Temperature increases due to climate change could have large impacts on ant foraging and function, thus also affecting the overall environment.

Rivera, Brianna

Institution: *MI - University of Michigan*

Discipline: Biology

Author/Contributors:
Brianna Rivera *Patricia Kalaput* *Abigail Dela Paz*,
Case Gregory *Randall Duncan*

Abstract Name: **Comparing the Proliferative effects of Pulsed Electromagnetic Fields (PEMF) and Capacitive Coupling (CC) Stimulus on Preosteoblasts**

In the US, more than 99 million individuals over the age of 50 suffer from low bone mass. Pharmacological drugs can reduce bone loss but come with serious side effects. Several non-invasive stimulators such as PEMF and CC have been shown to increase bone formation but the data have been inconsistent. Both L- and T-type Voltage Gated Calcium Channels (VGCC) mediate anabolic functions in osteoblasts and we postulate that these channels could be stimulated by PEMF and CC fields to increase anabolic function such as proliferation and elicit osteogenesis in osteoblasts. To test this hypothesis, we used MC3T3-E1 cells seeded at 2500 cells/well in 96 well plates to determine the effects of PEMF on proliferation after four days. To determine the role of VGCC's on proliferation we used nifedipine (5μM) or NNC-55 (5μM) to block the L-VGCC or T-VGCC, respectively. Additionally we used inhibitors to calcium binding proteins (CIB) calmodulin (W-7), CaMKII (KN-93), or Calcineurin (cyclosporin-A) to define the pathway for proliferation in these cells. We also stimulated control and inhibited MC3T3-E1 cells with PEMF or CC for 2 hrs each day for four consecutive days. Proliferation was determined using an MTT assay. In static controls, the proliferation of MC3T3-E1 cells was significantly decreased by inhibition of both L- and T-type VGCCs. Blocking downstream CIBs, resulted in a similar inhibition of proliferation. Application of PEMF significantly increased proliferation of non-inhibited MC3T3-E1 cells and was significantly suppressed by L-VGCC and T-VGCC inhibition. Preliminary data suggest that CC does not alter proliferation of osteoblasts. While inhibition of both L- and T-type VSCC's inhibited proliferation, preliminary results suggest that the T-VGCC may be important in reducing apoptosis. Defining the optimal parameters of both PEMF and CC stimuli in bone could provide insight into directed treatments of fracture healing, bone loss and osteointegration.

Rivera, Daphne

Institution: *AL - University of Alabama*

Discipline: Psychology/Neuroscience

Author/Contributors:
Daphne Rivera *Smitha Karavallil Achuthan* *Rajesh Kana*

Abstract Name: **Graph Theory Analysis of Functional Brain Networks in Autism**

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition with reported differences in behavioral and neurobiological characteristics. Previous studies have shown that autistic individuals differ from neurotypical (NT) individuals in brain connectivity (Kana et al., 2014), with some developmental differences as well (Bathelt; Geurts, 2021; Walsh et al., 2019). The purpose of this study is to use graph theoretical analysis to determine the differences in resting-state fMRI connectivity between autistic and NT individuals as well as between older and younger adults within those categories. Resting fMRI data from 58 participants were obtained from the publicly available Autism Brain Imaging Data Exchange (ABIDE II) database. The autistic (n= 29) and NT (n=29) groups were both divided into younger adults (ages 18-25 years) and older adults (ages 40-64 years). Functional connectivity analysis was followed up by ROI-to-ROI (region of interest) graph theoretical analyses using the CONN software (Nieto-Castanon; Whitfield-Gabrieli, 2021) to compare connectivity between diagnostic groups and age groups. Three measures were focused on: global efficiency, the measure of the connectedness of one node to other networks; local efficiency, the connectedness of the node to local nodes in the same network; and betweenness centrality, the involvement of the node in paths that run through the network (Smith et al., 2018). Global efficiency was found to be lower in the younger autistic group compared to the older for the right superior parietal lobule (RSPL) and the right intraparietal sulcus (IPS) (T=-3.03; 0.01 uncorrected). This is in line with earlier findings that found an age-related effect in connectivity of the IPS (Vinette; Bray, 2015). The autistic participants as a whole showed lower betweenness centrality in the left frontal pole than the whole NT group. These findings provide important insights into the brain network properties in autism.

Rivera, Luis

Institution: *GA - Kennesaw State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Luis Rivera *Juwan English* *Anthony Lopez*
Sandip Das

Abstract Name: **Sustainable IoT Sensor Node for Energy Efficient Smart Building Applications**

The ambient parameters inside buildings, like temperature, humidity, and illumination level are valuable information that can be used to optimally control HVAC and lighting systems. Such optimal operation can significantly reduce energy consumption and improve the energy efficiency of buildings. Conventional sensor systems either use batteries or wired power supply. Wired power connections are expensive and limit the mobility and locations where the sensors can be placed. On the other hand, battery powered devices require frequent manual battery changes. Not only do batteries hold the hassle of continuous maintenance, but if not recycled properly, they pose a threat to human health and the environment due to their toxic chemical constituents. This research involves designing and prototyping a self-sustaining batteryless IoT sensor system for indoor environment monitoring suitable for smart building applications. Our designed IoT sensor is self-sustaining which powers itself by harvesting energy from ambient indoor light. Alternatively, it can be powered using a remote infrared laser beam in the absence of ambient light. The built-in energy harvesting circuit integrates a solar cell, a DC/DC converter, and an energy storage capacitor. When the capacitor charges to a certain voltage, the low-power STM32 M0+ microcontroller wakes up and sends sensor readings to a hub. The circuit is designed such that discharge of the capacitor from its charged state gives enough time for the microcontroller to complete sensor reading duties, and then transmit the data using an infrared transmitter to a nearby hub. The Wi-Fi enabled hub then uploads the data collected from all sensors to the cloud, which is then analyzed and can be used to control HVAC, power outlets, and indoor lighting of the building to optimize energy usage. We will present the circuit design, programming strategy, and the communication techniques used to develop this smart building IoT sensor.

Rivera, Omar

Institution: ***TX - San Jacinto College***

Discipline: Mathematics

Author/Contributors:
Omar Rivera

Abstract Name: The Impact of Vector Fields and Topographic Maps in Life

Calculus is the introduction and foundation to higher level mathematical models. With the technological advances and the shift from material to intellect in the era of knowledge, I entail to analyze the impact and applications calculus has in present day. The universe is multidimensional, and calculus is math for multivariable functions. In daily life, society functions on data repositories, but few are aware of the degree their lives depend on mathematical equations. From the weather to their vehicles to GPS, technology uses multivariable calculus to analyze the data we collect. Technology quickens calculations, but even technology had to come from individuals applying mathematics. Some examples include topographical maps, which use cross-sectional areas to determine contour lines of elevation, vector fields, which analyze drag on F1 race cars or the aerodynamics of plane wings, and volume integrals, which can calculate the volume of irregular objects or terrain. Computers ease the labor of calculations, but they also allow individuals to learn and manipulate the lessons they're completing in calculus, such as the program GeoGebra, which allows users to visualize functions in 3 dimensions. There are many more use cases for calculus, and many in plain sight often overlooked by the common citizen which I hope to bring to the forefront of their minds with this research and presentation.

Rivera-Olivo, Yeismarie

Institution: ***PA - Community College of Philadelphia***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Yeismarie Rivera-Olivo

Abstract Name: The Inescapable: Overconsumption Encouragement Through Media - The Dichotomy of Tik Tok

Technology is what surrounds us, now more than ever. With reports of 98% of Generation-Z and Alpha individuals having an electronic device readily available at all times, it is no surprise that mass media is becoming the new way for users to consume information at a higher and faster rate than ever before. Most scientists have confirmed the damages of mindless indolent scrolling which media platforms such as TikTok provide. All, especially younger people, can turn off theirstimulation of the senses through 15-30 second content clips that require little intellectual processing and easily occupies hours of idle time.However, a surprising juxtaposition exists on TikTok. Although the app can be arguably useless it has also created its own subculture of users. Through a sophisticated algorithm, TikTok curates intellectual and academic content that produces surprisingly significant discourse. Generation-Z and Alpha now have access to a world of culture and connections creating a pathway for creators to use their online presence to create wavelength effects through debate, research, and discovery of new material.This paper will discuss the ways TikTok creates a circular void for itself, allowing for vacuous and substantive content to exists on the same platform. Are the days of drafting multiple arguments for your dissertation over? Imagine a 15-second video targeted to reach over 1 million people in less than a day, creating a trail of rhetorical breadcrumbs for discourse and debate to follow. Focusing on the future of academic work, this paper will analyze the way in which burgeoning intellectuals have already begun and will continue to use social media in innovative and professional ways.

Rivers, Desiree

Institution: *TX - The University of Texas at San Antonio*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Desiree Rivers

Abstract Name: **AI for Autism: The Use of Artificial Intelligence to Classify and Count Challenging Behaviors In Children With Autism Spectrum Disorders**

Assessing challenging behaviors that are aggressive and self-injurious in children with autism can be difficult. These behaviors can also be physically dangerous to both the child and bystanders. Therefore, it is important for clinicians to account for these behaviors, in which to establish a baseline to measure goals of the implemented behavioral health plan. AI has been used to assist in the diagnosis, classification, and treatment of autism and can be an effective way to help characterize and count these behaviors. Convolutional Neural Networking (CNN) is an effective way to use AI to classify challenging behaviors. We found that the CNN model's adaptability would be suitable to recognize images of challenging behavior such as kicking, biting, and head striking. Characterizing these behaviors within their designated topography. In order to create an AI tool that recognizes challenging behaviors in children with autism, existing datasets need to be converted and grouped into distinguishable behaviors that are focused on specific actions. We collaborated with computational and behavioral scientist to increase the overall sensitivity and accuracy of the machine learning. In the future the model's algorithm can be revised and applied to larger datasets. AI can be beneficial in early childhood interventions for children who are experiencing severe forms of autism. It can provide clinicians a way to better understand this disorder and provide effective treatment by observing and quantifying the overt behaviors that are being displayed.

Rix, Anika

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Anika Rix,
silviana amethyst

Abstract Name: **Exposition and Models for Nil Geometry**

Non-Euclidean geometry refers to any geometry outside of the standard Euclidean Geometry (uncurved space). Each non-Euclidean geometry has their own special properties. Nil Geometry is a non-Euclidean geometry derived using the Heisenberg Matrix group. This matrix group is most commonly used in quantum mechanics. Nil geometry's special characteristics include spiral geodesics (shortest paths), the x=0 plane is Euclidean, and there is rotational symmetry around the vertical planes.Nil Geometry is most commonly modeled two different ways, the Rotation Invariant model and a model derived from the Heisenberg Matrix group. The Rotation Invariant model is currently most commonly used for modeling the space due to ease of computation. The model based on the Hiesenberg group provides striking results when common geometric shapes, like a ball, are modeled through it. These shapes provide a simple demonstration of how a non-Euclidean geometry, like Nil, holds characteristic properties that distinguish it from Euclidean geometry.There is little readily-available information in the literature of why Nil Geometry was created, and there are not many examples of Nil geometry being used or modeled in the real world. The matrix used to derive Nil geometry has a lot of significance in the physics world, but this is not extended to the related geometry. Non-Euclidean geometries are also hard for many to visualize. The literature that is currently available on Nil geometry is made for graduate level mathematicians, with even fewer resources for undergraduate level students.This project will produce freely available exposition and 3d models explaining Nil Geometry and its applications, to help overcome the lack of such resources.

Roach, Erica

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Erica Roach

Abstract Name: **Postsynaptic Density Changes in the Trisynaptic Pathway in Schizophrenia: A Quantitative Postmortem Ultrastructure Study**

There is a staggering amount of evidence that the hippocampus is a key structure of dysfunction in schizophrenia (SZ). Neuroimaging and postmortem studies have revealed a positive correlation between hippocampal abnormality and degree of psychosis. Glutamatergic hyperactivity in the hippocampus is proposed to arise in multiple subregions and from specific cellular and morphological changes. In this study, we aimed to identify region-specific circuitry imbalances in excitation and inhibition via electron microscopy. Postmortem anterior hippocampus tissue was used from patients with SZ (N=10) and well-matched normal controls (N=10). Using the unbiased stereological disector method, we identified and measured the length, width, and area of asymmetric (excitatory) axospinous and axodendritic post synaptic densities (PSDs). We measured only the length symmetric (inhibitory) axospinous and axodendritic because the PSD of symmetric synapses is too miniscule to obtain the width and area. Measurements were taken in the dentate gyrus, CA3, and CA1 of the trisynaptic pathway in the hippocampus. We found an increase in the width of asymmetric axospinous PSDs in CA1 in SZ. We also foundan increase in the length of symmetric axodendritic PSD length in CA1, likely a result of long-term potentiation. These results are consistent with hippocampal glutamatergic hyperactivity literature andis the first region-specific quantitative analysis of PSDs in the hippocampus in SZ, providing novel insight to SZ hippocampal etiology.

Roark, Tayana

Institution: *IA - Iowa State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Tayana Roark

Abstract Name: **Rheological and Water-Holding Properties of Lentil Protein Isolate for Use as a Plant-Based Yogurt Alternative**

Due to the increasing awareness of the negative impacts of animal husbandry, there is a fast-growing industry for plant-based alternatives. Weight by weight, plant-based alternatives generally use much fewer resources for the same amount of protein output than animal-sourced foods, indicating that without sacrificing nutrition, we should be able to produce more food of nutritional value using the same amount of resources. Currently, a majority of the plant-based alternatives on the market, other than soy products, lack a protein content that matches that of dairy products. Pulse-based alternatives have been recognized for their protein content comparable to that of dairy; however, undesirable textures limit their uptake into the mainstream. The purpose of this study is to optimize the texture of a yogurt-like product produced by the lactic acid bacteria (LAB) fermentation of lentil protein isolate (LPI) solution. To accomplish this, I experimented with the temperature at which I performed my fermentation and the protein concentration of my LPI solution. The fermented LPI solution was then subjected to rheological measurements and centrifugation tests to understand the gellification and water-holding capacity abilities of the yogurt-like product, respectively. The preliminary results show that due to its gelling properties, LPI has a high potential for future applications in other fermented plant-based dairy alternatives, as proved by the rheological measurements. However, more research is needed to determine the water-holding capacity of this fermented LPI solution. This presentation will present the complete results of the study. The implications of these results will indicate whether an LPI yogurt-like product would be able to avoid settling and separation during storage, improving its ability to enter the mainstream food industry as an environmentally-friendly alternative to fermented dairy products.

Robbins, Cooper

Institution: ***TX - Lone Star College***

Discipline: History

Author/Contributors:
Cooper Robbins

Abstract Name: The Effects of the Bank War: An Observed Causality Between Jacksonian Monetary Policy and Californian Settlement Based on Gold Demands

With an aim to understand the relationship between California's gold-centric settlement caused by the Gold Rush of 1848 and the monetary policy of President Andrew Jackson, this study investigates the Bank War and its impacts on the national gold supply while analyzing its subsequent effects on the growth of California following the Panic of 1837. Jacksonian policies made against the Second National Bank, such as the veto of the bank's recharter, the transfer of federal funds to state banks, and Specie Circular, are analyzed to ascertain their influence on national gold demands and any resulting impacts on the national economy. The consequences of this resulting demand are determined by investigating the statistics of California's population and manufacturing outputs at the time of the Gold Rush, which are derived from the Seventh Census of the United States in 1850. Results indicate that Jacksonian policy was the driving force of the gold shortages that caused the Panic of 1837 through a widespread default on land payments—consequently generating a demand for gold which incentivized the mass settlement of California undertaken during the Gold Rush. The initial mass migration caused by the discovery of gold created needs for otherwise unestablished markets, which in turn further stimulated the fledgling economy of the state. This assessment establishes a previously unexplored impact of Jackson's tenure as president and provides a more informed understanding of historical economics. Future research is needed to properly analyze the full impact of the Panic of 1837 and could include a comparative analysis of its similarities with other significant depressions in America, such as the post-war growth observed following the Great Depression and the housing bubble which caused the Great Recession of 2007.

Roberson, Greta

Institution: ***VA - George Mason University***

Discipline: International Studies

Author/Contributors:
Greta Roberson *Oakley Hill* *Nicholas Sherwood*

Abstract Name: Impact of COVID-19 on an International Sample of Religious Leaders: Challenges, Sources of Resilience & Unmet Needs

The COVID-19 pandemic has placed unprecedented challenges on religious communities around the world and many have turned to their religious leaders for guidance but this places them and their houses of worship at a greater risk for stress and adversity. Religious leadership has a responsibility to guide and inform their congregants by answering remarkable questions while houses of worship offer a setting to practice faith. Nonetheless, leadership and houses of worship are also found at the center of controversy over ways to best mitigate issues stemming from the pandemic while also staying within tradition of the religion like taking communion, gathering at places of worship, and hosting ceremonies or proper burial, for instance. The data comes from a series of interviews with religious leaders from around the world from various backgrounds and denominations. In order to qualify, they needed to hold some responsibility for a congregation or community. During the interview process, we asked questions concerning the challenges that faced them, their family, their congregation, or the greater community they served. Next, we ask about their sources of strength and coping mechanisms to withstand or overcome hardships. Finally, we are asked about and later identified unmet needs: what do they, their loved ones, congregation, and community need to recover and move forward? Their answers suggested that various challenges arose from government policies to curb the effect of the pandemic. Moments of strength came from delving into scripture and becoming more involved with the local community and serving others. Meanwhile, families and houses of worship struggled financially and even entered a deficit. Among other challenges and overcoming some, the pandemic has left lasting effects on leadership, houses of worship, and the local community and brought new questions on how to combat similar crises in the future.

Roberts, Isa

Institution: *OR - Oregon State University*

Discipline: English/Linguistics

Author/Contributors:
Isa Roberts

Abstract Name: **Rediscovery of the Self from the Outside in Kathy Jetn?il-Kijiners Iep J?ltok: Poems from a Marshallese Daughter**

Kathy Jetn̄il-Kijiner's poetry collection, Iep Jāltok: Poems from a Marshallese Daughter's, asks a western audience to consider the beauty of Marshallese culture, to recognize their destructive role in Marshallese history, and finally to act against anthropomorphic climate change to prevent the foreseeable destruction of the Marshall Islands. Its main title, Iep Jāltok, translates to "a basket whose opening is facing the speaker." In this figurative basket Jetn̄il-Kijiner places her own memories and experience as a member of the Marshallese diaspora. However, collected alongside her experiences are texts from external sources, some even from western perspectives. Jetn̄il-Kijiner transforms histories, linguistic fragments, and missionary songs into verse.This paper delivers a close reading of these "outside poems" to examine what their inclusions in the collection signal on a metatextual level, with poem originating from western sources providing particularly deep ironies in their role as reflections and distortions of Jetn̄il-Kijiner's Marshallese consciousness various stages of her self discovery. It also analyzes how Jetn̄il-Kijiner transforms non-verse text (e.g. dictionary entries, myths, historical accounts) into verse, as well as how she adjusts texts already in verse, and what meanings her choices in line breaks and meter convey. The paper concludes that it is through these "outside poems," that Jetn̄il-Kijiner traces her own journey of self understanding demonstrating not only the necessity of external changes in the world, such as combating climate change and protecting and learning from marginalized peoples and cultures, but also the necessary internal developments, using herself as a model, for the western audience to act on these changes without trampling on those for which the most is at stake.

Roberts, Maggie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Theatre and Dance

Author/Contributors:
Shasta Reese

Abstract Name: **Shining a Light on Experimental Theatre Practices: A dissection of Neo-Futurism as it is and how it is applied in a modern performance context.**

This project seeks to explore the tenets of an experimental style of theatre in a modern performance context while working with passionate students to help expand their means of artistic expression. Neo-Futurism is an active creative force and is continuing to evolve within the theatrical community. I will be basing my project on the work of The Infinite Wrench, a neo-futurist ensemble that is based in Chicago, Illinois. They are an ensemble of writers, directors, and actors that perform thirty plays in sixty minutes, all while following the four basic tenets of neo-futurism: no suspension of disbelief, speed and brevity, scripted and planned, reliance on chance. My goal is to create an ensemble of students at UWEC that mirrors this aesthetic of truthful communication between the audience and the performer. The main research questions I want to explore are 1. What exactlyisfuturism? 2. How did it evolve into neo-futurism? 3. How can we, as writers and performers, apply this specific style in a modern performance context and 4. How does a theatre practitioner develop this style of theatre? My objective for myself and the ensemble is to break out from the robotic tendencies of realism based writing and thinking and creating a new heightened theatrical sensibility. I want the audience to leave with a newfound appreciation for experimental theatre. In addition, I want our plays to evoke a particular atmosphere that challenges the audience to think for themselves. Moreover in executing this project, I want to gain dexterity in performing, writing, and directing within an experimental environment while also developing my skills as a leader amongst fellow creators. Lastly, I would like to develop this material into something suitable for a possible confrence presentation, a poster and/or a short performance at NCUR.

Roberts, Olivia

Institution: *SD - University of South Dakota*

Discipline: **Mathematics**

Author/Contributors:
Olivia Roberts

Abstract Name: **Understanding Musical Systems with Zn - Cayley Graphs**

It is well-established that music theory uses mathematics to explain concepts such as pitch, interval,rhythm, and counterpoint. Chord progression and pitch frequencies can be beautifully explained by mod 12 transformations and geometric ratios. Modern mathematical tools are used to advance concepts of music theory. This area of research is very active and answers the “how (music is born or can be created)” question; however, the “why (mathematics helps explain to some extent, music)” question is much more difficult. Possible answers will likely be unsatisfactory for different categories of researchers.In my research project under the guidance of mathematics professor Gabriel Picioroaga, I follow two avenues: one to show that the Cayley graph of the group Z12 with generators 3 and 4 explains the constructions of (most) major and minor chords. This is done by “walking” on paths in the graph originating at the root of the chord. The circle of fifths can be explained as “stepping” on both generators at once and recording the loop. Based on these considerations, with Z12 as model, a second avenue opens; we generalize Zn where n is a product of two relatively prime numbers. These are generators that help define chords as paths in the Cayley graph of Zn. We prove that a circle of fifths-like notion exists as well, which helps create harmonies. As a possible answer to a version of the “why (not other groups or frequencies)” question, we have written software in Maple to hear how these chords sound for Z6, Z10, and Z15. The tuning we consider is a generalization oftemperate tuning. Moreover, the frequency distance of the octave (which doubles from pitch C to next higher C) can be chosen to be a variable positive number.

Roberts, Zachary

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Zachary Roberts *Haley Kvarnberg* *Holly Stephens,*
Pia Muri *Anthony Wheeler* *Lyse Norian*

Abstract Name: **Testing Effects of the Anti-diabetic Agent Acarbose in Mice with Renal Carcinoma: A Diet-Based Approach to Cancer Treatment**

Immunotherapies are the standard of care for renal cancer patients, but only ~50% of patients respond to treatment. Because renal cancer cells use glucose as an energy source to sustain their proliferation, our lab studied the connection between diet and renal cancer using acarbose, an FDA-approved glucoregulatory agent that prevents the breakdown of complex carbohydrates into glucose, thereby reducing the amount of sugar that makes it into the bloodstream after eating. In lean mice with renal tumors from the Renca renal carcinoma cell line, past research in our lab showed that acarbose blunted blood glucose elevation after meals and reduced renal tumor growth in a CD8 T cell-dependent manner. When acarbose was combined with anti-PD-1 immunotherapy, spontaneous lung metastases were significantly reduced. However, both obesity and type-2 diabetes – characterized by high blood glucose – are common comorbidities in renal cancer patients and tend to result in worse clinical outcomes. Thus, to emulate clinical patients, we worked to develop a BALB/c mouse model that would reflect both obesity and high blood glucose by using a standard high-fat diet plus streptozotocin, a toxic chemical that kills insulin-producing pancreatic beta cells. We found that using this approach, it was possible to generate mice with either obesity or high blood glucose, but not both. Low-dose streptozotocin produced unregulated type-1 diabetes, reducing body weight and survivability. We then tested the efficacy of acarbose in obese mice on a standard high-fat diet alone and found it to be ineffective at reducing renal tumors and spontaneous lung metastases. Surprisingly, acarbose was also ineffective at slowing renal tumor growth in mice fed a high-fat diet containing starch. Future studies will examine if acarbose improves immunotherapy outcomes in mice with obesity and evaluate acarbose efficacy in other tumor types.

Robertson, Meredith

Institution: *GA - Georgia College and State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lauren Ernst-Fortin,
Meredith Robertson,
Marley Lentine-Brown

Abstract Name: **A Pilot Study Exploring Veteran Identity Using Lyric Analysis in a Qualitative, Community-Based Participatory Action Research Framework**

Researchers attempt to define what it means to be a Veteran, but it is rare for that question to be directly asked of Veterans. Traditionally, experimenters define variables and ask the community of interest (CoI) to provide responses without the CoI being included in the research process or reaping any direct benefit from participation. There is a high degree of distrust and disenfranchisement reflected in Veterans towards the mental health care system and the scientific community. We aim to use the CbPAR model to amplify their voices and focus on what is important to them. We are seeking to allow Veterans to define their identity in their own words. Researchers serve as messengers to help amplify Veteran voices and disseminate their stories to the larger community. In the current study, we asked Veterans to identify songs that answered the question, "What does being a Veteran mean to you?" This study is part of a larger research project using both photovoice and lyric analysis to help define the "sights and sounds" of Veteran identity. Veterans worked individually with researchers through the process of lyric analysis, which is a music therapy intervention in which the client and therapist listen to a song together and discuss the connection the lyrics have to the client's life experiences. Transcripts of interviews will be analyzed to uncover common themes and elements that help researchers understand how they conceptualize their community identity as Veterans. External validity is addressed through member checking, in which participants will review transcripts, discuss identified themes, and choose representative songs to present as a part of an immersive, interactive gallery experience for the community to allow for their stories to be told. We assert that more research should be done with the Veteran community, not to them.

Robinette, Jake

Institution: *TN - University of Tennessee at Knoxville*

Discipline: Computer Science/Information Systems

Author/Contributors:
Jessica Taylor *Jake Robinette* *Cary Staples,*
Katherine Hirt *Jacqueline Juneau* *Tanner Dunning*

Abstract Name: **The Beloved Community: Creating a collaborative experience to explore Ethical Decision Making and Perspective taking using historical references**

The goal behind creating this experienceis to allow participants to engage with the decisions, actions, and perspectives of the governmental officials, college administrators, and student demonstrators during the 1960s student sit-ins for Civil Rights in Montgomery, Alabama. This project allows participants to see themselves in each of the moral leader comparators lived experiences as told by them, as well as engage with the original documents and newspaper coverage of the events. The events selected for this pilot spawned two landmark legal cases—the Dixon v. Alabama State Board of Education (1961) and the Sullivan v. NY Times (1964). This poster presentation outlines the metamorphosis of historical content into a collaborative, playable experience. Using content that was analyzed by previous teams, our goal was: to create archetypes of the people involved in the actual events; segment events into specific questions; and organize information access to individual players based on character perspective. Students then meet synchronously to debate the "Event Questions" from the perspective of their assigned archetype. At the end of the timed discussion, all participants propose and present to the group, a course of action based on their research and the impact of the discussion. This continues for four rounds. At the end of the experience, suggestions for actions are compared to the historical documentation of the events. Based on the game mechanics used in "The Situation Room Experience," students move from exploring contemporary events, back in time, where information is received through newspapers, flyers, radio and word of mouth, to better understand the context of decisions that still affect us today.In addition to understanding history, this experience can be used to promote the higher order skill development needed by college students - empathy, perspective taking, intercultural agility, and ethical decision-making.

Robinson, Anai

Institution: *OK - Oklahoma State University*

Discipline: **Biology**

Author/Contributors:
Anai Robinson

Abstract Name: **The Metabolomic Analysis of Sjogren's Disease**

Autoimmune diseases result from the body's inability to distinguish between unknown and healthy cells. Sjorgen syndrome is an autoimmune disease that causes dryness in the eyes and mouth. The name for the autoimmune disorder was derived from Henrik Sjögren and can also be known as Sicca syndrome. However, the disease resembles the composition of Lupus disease due to the origin of connective tissues. The target of this study was to observe the difference in the metabolic makeups of t-cells. The experimental setup consists of methanolic extraction utilizing a liquid chromatography-mass spectrum to analyze the metabolites from the t-cells of a Sjögren patient and healthy control. My founding consists of significant differences in metabolomics in the Sjorgen patient sample compared to the healthy person control.

Robinson, Caleb

Institution: *TX - Texas Lutheran University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Caleb Robinson

Abstract Name: **Role of Soil Moisture and its Assimilation on Streamflow Forecasting using Hydrologic Modeling and Remote Sensing**

Several studies have shown that skillful streamflow forecasts can improve management of water and agricultural operations. Monthly to seasonal streamflow forecasts are primarily dependent on atmospheric conditions, Sea Surface Temperatures (SSTs) and initial hydrologic conditions such as soil moisture. Soil moisture data assimilation has proven to enhance streamflow forecasting skills using hydrologic modeling. The goal of this study is to develop monthly updated streamflow forecasts and quantify the role of soil moisture on streamflow forecasting skills.
Forecasts were created using simulated soil moisture from the Variable Infiltration Capacity (VIC) model as well as using soil moisture estimated from remote sensing. These forecasts were compared to observed streamflow from 1-4 months lead time on monthly and seasonal basis. For a shorter lead time of 1-2 months, remote sensing data didn't improve forecasting skill. However, for a 4-month lead time, remote sensing data showed some improvements in forecasting skill, especially during summer seasons. During winter seasons, forecasting results didn't improve when using soil moisture was obtained from the ESA-CCI satellite. All forecasts, using both simulated and remote sensing information, showed poor performance during months of extreme flooding.

Robinson, Gavin

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Myles Chung,
Gavin Robinson

Abstract Name: **Genetic Modification of Saccharomyces cerevisiae Using ADE2 Screening**

Industrial yeast strains are used in the food and beverage industry to create products we consume on a regular basis. Genetically modified yeast can be used to create new products with unique properties, but Food and Drug Administration (FDA) guidelines restrict the use of antibiotic resistance genes to construct strains that will be in products for human consumption. To solve this problem, we are developing an industrial yeast strain that uses the ADE2 gene as a marker for genetic modification. When ADE2 is knocked out, the yeast cells accumulate a metabolic intermediate and turn red. By including a functioning copy of ADE2 along with our new genetic material, we can select for successfully modified yeast by looking for colonies that are white again. This approach to genetic modification aligns with FDA guidelines for ingredients that are “generally recognized as safe” and will allow us to create genetically modified yeast strains to be used in the food and beverage industry.

Robinson, Justus

Institution: *GA - Valdosta State University*

Discipline: **Political Science**

Author/Contributors:
Justus Robinson

Abstract Name: **Political Party Affiliation and the Significance of Race: How Race Correlates With Political Party Identification.**

The 2020 Presidential election was one of the most historical elections in the United States. The world witnessed both Presidential candidates break and set a record for obtaining the most popular votes of any president in United States history. Controversies and speculations surrounded the election, but most importantly, the world observed that The United States is arguably the most divided that it has ever been. The Black Lives Matter movement and its countermovement, Blue Lives Matter, highlighted this division. The Black Lives Matter movement, composed largely of African-Americans, demonstrated alignment with the Democrat party, while the latter, composed of mostly Caucasians, aligned with the Republican party. In observance of this division, this essay asks: Is race a significant factor in determining one’s party identification? In this essay, the data collected from the American National Election Studies 2020 Time Series Study is evaluated and utilized to produce various graphs and tables evaluating the correlation between the independent variable, “Race,” and the dependent variables, “Party Identification”, “Democratic Feeling Thermometer”, and “Republican Feeling Thermometer”. In addition to the conducted research, literature review on the correlation of race and party affiliation was analyzed. For instance, various authors from the article Black Voters, Black Candidates, and Social Issues: Does Party Identification Matter? conducted research at Christopher Newport University to determine if race was more significant than ideologies regarding party identification. These authors found that the Democrat party identification is the biggest factor in Black voter decision making, validating that race was a more significant factor than ideologies. The findings of both the conducted research and the literature review reveal that Caucasians were more likely to vote Republican, while non-whites were more likely to vote Democrat. Both the primary and secondary research validate that race is a significant factor in one’s party identification.

Robinson, Morgan

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sophia Symalla *Morgan Robinson* *Kelli Maleska*

Abstract Name: **False Memories: the Fear Factor**

Purpose: How does mood affect susceptibility to false memories? People are less likely to form false memories when sad, ostensibly because sadness encourages memory encoding of item-level information, while neutral moods encourage holistic processing, in favor of the gist (Storbeck, 2013). Though the protective benefit of sadness in avoiding false memories has been demonstrated, we investigate how both sadnessand fear–another important negative emotion– affect susceptibility to false memories. This is significant to investigate because when a negative event is experienced, people often remember vivid and specific details of the incident. In these traumatic scenarios, fear is likely the strongest emotion. From our work, we will be able to demonstrate whether fear, like sadness, protects against false memories.Procedure: Participants view movie clips validated to reliably elicit the desired emotions: neutral, sadness, fear (Gross; Levenson, 1995; Hewig et al., 2005) and rate their mood using the positive and negative affective schedule (PANAS). False memory susceptibility is evaluated with the Deese–Roediger–McDermott (DRM) paradigm in which participants study lists of words that are each related to a critical, unpresented lure, then take memory tests on the words. If a participant misremembers a critical lure as being presented, a false memory has occurred (Roediger; McDermott, 1995). The mean number of falsely recognized critical lures across the three mood conditions will be analyzed using ANOVA. This project has received IRB approval and data collection has begun. Expected Results and Implications: If fear, like sadness, confers a protective benefit against forming false memories as we hypothesize, participants in neutral moods will have significantly more false memories than sad or fearful participants. Of theoretical significance, we will determine if fear, like sadness, encourages detail over gist processing. Of applied significance, this study may add to our understanding of memory formation in traumatic situations.

Rockey, Madison

Institution: *PA - Susquehanna University*

Discipline: Biology

Author/Contributors:
Caroline Nelson,
Madison Rockey

Abstract Name: **Effects of Aromatic Prenal Chromene Oxime Derivatives on A375 Cancer Cells**

New anti-cancer drugs are in demand due to the undesirable side effects of pre-existing drugs and the tendency of cancer cells to become resistant to highly effective treatments. Oximes are highly selective kinase inhibitors, which makes them ideal for drug design. Six aromatic prenal chromene oxime derivatives were synthesized and examined for apoptosis induction when tested on A375 human melanoma cells. The compounds were compared to etoposide and dimethyl sulfoxide as positive and negative controls for their ability to induce apoptosis. A375 cells were cultured in DMEM supplemented with 10% FBS and passaged onto glass coverslips in 6 well plates. 50 micromolar concentrations of each derivative were added to two milliliters of cells in supplemented DMEM. After 24 hours in culture in the presence of the derivative, DAPI and Caspase stain were added to each well. After 1 hour of staining, live cells were imaged and then fixed with 4% formaldehyde for 15 minutes. To determine the percentage of cells undergoing apoptosis, cover slips were viewed under a fluorescent microscope. Cells that appeared green were scored as undergoing apoptosis, while the cells that appeared blue allowed us to identify the total number of cells. We calculated the percentage of cells undergoing apoptosis after exposure to each derivative. All 6 derivatives increased the number of apoptotic cells, relative to the DMSO control. The compounds M-Prenal oxime, oxime benzoate, and oxime cinnamate seem to have the strongest effects, although none of them were as effective as an identical concentration of etoposide. We are working to improve the consistency of results and to determine the concentration dependence of each derivative. Our initial results suggest that chromene oxime derivatives have potential as anti-cancer drugs and can induce apoptosis in a human cancer cell line.

Rodgers - Johnson, Cameron

Institution: *AL - University of Alabama at Birmingham*

Discipline: Music

Author/Contributors:
Cameron Rodgers - Johnson

Abstract Name: **An American Outcry - Using Music Composition as a means to discuss gun violence in American Schools**

Gun violence is very far from a foreign topic in our modern society. Unfortunately, America's youth are subsequently placed in the crosshairs far too often. Stemming from Columbine to Uvalde, active shooter incidents on school grounds has remained an ever present threat to the safety and well-being of students of all age ranges. Therefore, An American Outcry serves paying homage to the past victims of school gun violence. However, it also attempts to serve as a firm message that serious reform is needed, or else this is a conversation that will simply continue to happen over and over again. The piece, originally scored for wind ensemble, is centered around two core themes: fear and hope. The fear aspect is derived from the opening of the piece, which starts in a minor key, and is set up much like a traditional funeral march would. The remained of this section is a slow build to the violent climax that is meant to depict the pure tragedy that is gun violence. Following that section, the piece transitions into a major key and is begins to pull thematic material from the mid-nineteenth century ballad, "Annie Lisle". The tune, although having a historically grime meaning, is often found to be the basis for many school alma maters, thus making it the perfect setting for the theme of hope. The piece ends with the return of the fear theme, there to represent the failure our society has experience in gaining control over these travesties. The final page contains both themes playing offset from one another by one beat and is to serve as a reminder that work is still to be done if the safety of America's schools is ever to be guareented.

Rodriguez, Jessica

Institution: *TX - Texas Woman's University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jessica Rodriguez *Temiloluwa P. Olaoluwa* *Michael P. Hunter,* *Dayna Averitt* *DiAnna Hynds*

Abstract Name: **Role of Spinal Interneurons in Nociceptive Signaling Pathways in a Polytrauma Model**

Due to their differing responses post-injury, the central nervous system (CNS) and the peripheral nervous system (PNS) are often thought to be completely separate within our bodies. Neuronal regeneration does not normally occur in the CNS due to the surrounding environment whereas the PNS readily supports axonal regeneration. On account of a lack of effective treatment options to treat polytrauma in humans, the purpose of this research is to take a look at the mechanisms and interactions that occur post-injury in both of these systems. Currently we are characterizing central nervous system responses to a peripheral nerve injury. We have established a burn injury model in rats which led to increased thermal analgesia and mechanical allodynia in the group who received the peripheral injury. Immunohistochemistry using calcitonin gene-related peptide (CGRP), a neuropeptide that is correlated with pain, showed more axonal processes in the dorsal root entry zone compared to sham rats. These data suggest increased arborization in the dorsal root entry zone. Current experiments are designed to corroborate this by observing the upregulation of growth associated protein 43 (GAP43), a protein expressed during axon regeneration, using western blotting. In future experiments, we will do additional immunohistochemistry using various neuronal markers to determine what types of interneurons these new processes are synapsing with. Given that we are focusing on nociceptive spinothalamic pathways, we expect increased synapses with glutamatergic interneurons. Supported by Texas Woman's University Division of Biology, and grants from the TWU Research Enhancement Program (to DLH), Experiential Student Scholars Program (to MPH), Center for Student Research (MPH), and National Science Foundation Promoting Research and Innovation in Methodologies for Evaluation (to Diana Elrod, supporting JR, #1953448).

Rodriguez, Valentina

Institution: *CA - San Diego State University*

Discipline: **Biology**

Author/Contributors:
Valentina Rodriguez,
Daniel Shiang,
Adam Burgoyne

Abstract Name: **HCC Organoid Culturing and Drug Screening**

Liver cancer is the sixth most prevalent cancer and the third most common cause of cancer death in the world. Studies have demonstrated disparities in access to cancer care and outcomes for minority populations, including Latino patients. In San Diego County, liver cancer is an overrepresented malignancy, with mortality rates two-fold higher in Hispanic patients versus non-Hispanic white patients. In our lab, we are developing and refining a three-dimensional model, known as organoids, of the most common type of liver cancer, hepatocellular carcinoma (HCC). These patient-derived organoids are generated from human liver cancer resection and biopsy specimens. This was accomplished by establishing a pipeline in the electronic medical record (EMR) to identify patients who would be potential candidates for tissue donation via the biorepository while ensuring that Latino patients were enhanced in this cohort. Two tissue samples were collected to harvest into organoid cultures and to propagate for drug treatments in vitro to gather data for analysis. We are eager for the future workflow in the EMR that will allow us to identify all patients undergoing liver tumor biopsies at UCSD. For the upcoming academic year, our goal is to increase organoid specimens, while also looking for differences in molecular profiling and responses to different therapies in the Latino and non-Latino HCC populations.Research reported in this abstract was supported by the National Cancer Institute of the National Institutes of Health under award numbers: U54CA132384; U54CA132379. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Rodriguez Cardenas, Juan

Institution: *GA - Kennesaw State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Juan Rodriguez Cardenas,
Hossain Shahriar,
Timothy Williams,
Shahriar Sobhan,
Masrura Tansim,
Jobair Hossain Frauk,
Edwin Matthew,
Jack Wright

Abstract Name: **A Review of Dark Web: Trends and Future Directions**

The Dark web is regarded as the hidden layer of the vast world of web browsing. It is often labeled as malicious and a danger to the common user. In this research, we dive into the skeleton of what constructs the Dark Web and its contents. To conduct our research, we broke down published papers from several scientific Databases and explored different tools such as “Web Crawlers "which scrape Data through keywords, text data, and hyperlinks which are then stored by the crawler and visited at a later time alongside the Machine learning Techniques and Algorithms used by these Crawlers. The onion router (TOR) Browser, a favorable Web browsing tool for its privacy and anonymity settings, has become favorable and a top choice for any cyber-criminal attempting to mask themselves and hide their IP address through these layers of protection, making monitoring and controlling the dark web difficult for law enforcement. Our research has many routes that we can take as technologies and new vulnerabilities become more accessible and the surge of new marketplaces and offered services is bound to increase.

Rodriguez Mendez, Carla

Institution: ***WI - Alverno College***

Discipline: Biology

Author/Contributors:
Carla Andrea Rodriguez Mendez,
Eulandria Biddle

Abstract Name: Isolation of Secondary Metabolites from Antimicrobial Producing Bacterial Isolates

Antimicrobial resistance has become a major threat to public health in the 21stcentury. It threatens the effectiveness of treatments and prevention of illnesses caused by bacteria, parasites, viruses, and fungi not vulnerable to common medicines. The discovery of new antimicrobials can be a success to modern medicine targeting infections, including those present during surgery, and/or cancer chemotherapy (WHO, 2021). During this study, I focused on studying the secondary metabolites of 4 unique isolates (Jax1, Jax25, Wilson2, Wilson8) derived from soil that was previously demonstrated to exhibit inhibition against specific human pathogens. Two different tests were performed on each of the isolates. Primary testing using actively growing cells was performed on human pathogens known to acquire antibiotic resistance (tester strains): E.coli, S.epidermis, E.caratuvore, P.earuginose, E.aerogenes, B.cereus, A.baylyi, B.subtilis, and P.putida, to determine if the soil isolates inhibited the tester strains. Isolates that showed inhibition zones in the primary tests were chosen for the secondary testing. The overlay assay was performed to determine if the secondary metabolites produced by the soil isolates were able to inhibit the growth of the tester strains. Jax1 and Jax25 showed inhibition against gram-positive tester strains only (whole cell; 2* metabolite), while Wilson2 and Wilson8 showed inhibition against both Gram-positive and Gram-negative tester strains (whole cell; 2* metabolite). Currently, I am in the process of sequencingJax1 and Jax25, to determine their identity. Once their identity is determined, future work would include transposon mutagenesis to determine the genes responsible for antimicrobial activity.

Rodriguez Trujillo, Juana Valentina

Institution: ***TN - Trevecca Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Jose Francisco Carrascal-Saenz,
Alayna Johnson,
Juana Valentina Rodriguez Trujillo

Abstract Name: Investigating the Relationship between Academic Stress, Trait Self-Control, and Compulsive Behaviors in College Students

Stress amongst college students has been at an all-time high, contributing towards issues in coping, poor academic performance, and increased dropout rates. The American Psychological Association has even identified this population as vulnerable to high levels of stress. The current study aimed to explore relationships with academic stress, trait-self control, and various compulsive behaviors including disinhibited eating, cyberloafing, and compulsive online shopping. In total, 164 college students were surveyed utilizing convenience sampling to take part in this research by volunteering their time to fill out a 71-item survey. Survey packets included the Perceptions of Academic Stress Scale (PAS), the Brief Multidimensional Self-Control Scale (BMSCS), the Dutch Eating Behavioral Questionnaire (DEBQ), the Cyberloafing in Lectures Measure (CLM), and the Modified Bergen's Shopping Addiction Scale (M-BSA). In addition, several demographic questions and daily hours spent on Social media were asked. It was hypothesized that there would be negative correlations between academic stress and trait self-control. Furthermore, it was believed that there would be negative correlations between trait self-control and the various compulsive behaviors studied. Lastly, it was hypothesized that there would be positive correlations between academic stress and the compulsive behaviors studied. Results found significant moderate positive correlations between academic stress and cyberloafing and compulsive online shopping. Furthermore, a significant moderate negative correlation was found between academic stress and trait self-control. Trait self-control and the compulsive behaviors studied were unrelated. Correlations between academic stress and disinhibited eating were also not significant. Recommendations for future research, implications, and limitations are discussed.

Roessler, McKenna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Keegan Moglowsky *McKenna Roessler* *Lauren Weis*
Jennifer Muehlenkamp

Abstract Name: **Implications of COVID-19 on College Counseling Services**

Many aspects of college life were impacted by the restrictions set in place due to the Covid pandemic, especially when it came to mental health. During this time, the demand for counseling services increased and many students were reporting that the pandemic had negatively impacted their mental health (APA, 2020; Castonguay et al., 2021). Prior to Covid, studies have found that some of the most common concerns students present tocounseling with include anxiety, depression, and relationship difficulties (Cairns et al., 2010; Barr et al., 2011). It is unclear how the pandemic may have impacted the prevalence of these concerns on college campuses. One focus of our study was to uncover whether the most common presenting concerns have changed from pre-covid compared to post-covid. Another adjustment that was made due to Covid was the transition to treatment through an online setting. While these changes have been beneficial in managing depression, anxiety, stress, and other concerns, there have been mixed results when it comes to effectiveness compared to in-person treatments (Bambling et al., 2021). A second focus of our study sought to identify how satisfied patients of college counseling services were with online treatment. To complete our study, we looked at archival deidentified program evaluation data collected from a large Midwestern University System's counseling outcome evaluation tool including responses from our local campus. Our findings note that both at our campus and throughout thesystem, the most prominentpresenting concern both pre-covid (2017-2018) and post-covid (2021-2022) was anxiety, followed by stress and depression. Additionally, a majority (57%) of those who received counseling post-covid chose a telehealth appointment compared to an in-person appointment. Additional analyses examining group differences in satisfaction with counseling services are currently being completed. Implications of the results for counseling services on college campuses will be discussed.

Rohde, Henry

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Mathematics

Author/Contributors:
Henry Rohde

Abstract Name: **ADE Classification in Quiver Representations, Lie Algebras and Cluster Algebras**

ADE Classification is a pattern that appears in several branches of mathematics. To understand ADE Classification, we will use Gabriel's Theorem from quiver representation theory. Quivers are directed graphs, and their representations are collections of vector spaces at vertices and linear transformations corresponding to arrows between each other. Gabriel's Theorem states quivers of finite type can be classified by ADE Dynkin diagrams. Additionally, Gabriel's Theorem allows us to determine a finite-dimensional algebra's properties by looking at its associated quiver representations. By using quiver representation theory, we can study the corresponding cluster and Lie algebras which share the same ADE classifications, creating a bridge among quiver representations, cluster algebras, and Lie algebras. Consequently, we will address more connections among these three theories.

Rohde, Zach

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Daina Kalnina *Evan Weiher* *Zach Rohde*
Kya Meunier *Chase Fillion* *Chris Connoy*
Molly Halverson *Lydia Przytulski*

Abstract Name: **Spider functional community assembly along a stress gradient in Northern and Southern Wisconsin forests**

Ecological communities are smaller subsets of overall larger species pools. Ecological selection can cause a community to have less than expected functional trait diversity, narrowing it to a small subset of features (trait clustering). There are also processes, such as competition, that can cause communities to have greater than expected trait diversity (trait overdispersion), especially where ecological stress is low (i.e., the stress-dominance hypothesis). Ecological selection can also alter the mean trait values of communities.There has been considerable work on the functional assembly of plants and fish, but little is known about assembly of terrestrial invertebrate animals. We placed three pitfall traps in 40 locations in Northern forests (i.e., mainly evergreen conifers) and Southern forests (i.e., mainly deciduous trees) across a strong gradient in soil moisture. We measured the size and asymmetry of spider body, leg, eye, and mouthpart traits because they are related to resource acquisition. We used Monte Carlo simulations to estimate the amount of functional trait diversity and mean trait values that would be found if community assembly was caused by random ecological drift. The simulations used three species pool scales: regional (all species), within Northern or Southern Wisconsin forests, within specific forest types. Overall, trait diversity was less than expected by chance, but the effect size was smaller when using smaller species pools. Spiders were larger in Southern forests, but mean trait values were unrelated to soil moisture.Size trait diversity increased with moisture in Northern forests, but not in Southern forests. This partially supports the stress-dominance hypothesis.Asymmetry trait diversity was also unrelated to moisture.Functional community assembly differed in Northern versus Southern forests, and so there are unique assembly rules for each region.

Rohlfs, Peyton

Institution: *NC - Elon University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Peyton Rohlfs

Abstract Name: **Nationalism, Religion, and Identity Formations for the Sri Lankan Diaspora in Staten Island, New York**

This essay argues the Sri Lankan diasporic community in Staten Island, New York negotiates narratives around “authentic” Sri Lankan identity and sense of belonging that encapsulates a romanticization of nationalism, religious identity, and history. In South Asian research emphasis has been on violent outbreaks such as the Sri Lankan civil war, however; an under-studied area is the memory and performance of the Sri Lankan diaspora community in Staten Island, New York in connection to nationhood and nationalism. Therefore, I aim to expand on South Asian research by surveying how mainstream Sri Lankan ideologies are transnationally assimilated to mediate parameters and artifacts around “authentic” Sri Lankan-ness in western spaces. Thus, my contribution will be to understanding how “authentic” Sri Lankan identity is formed and established in Sri Lankan coded spaces such as Lakruwana the restaurant or the Sri Lankan Arts and Culture Museum (SLAC) in Staten Island that legitimizes authority to Sri Lankan national and religious consciousness that is limited to the dominant experience and identity in Sri Lanka: Sinhalese Buddhist. Utilizing Marita Sturken’s Tangled Memories and Benedict Anderson’s Imagined Communities, I suggest through performance and narration, Sri Lankan identity is embedded within communal spaces such as the SLAC museum or Lakruwana restaurant as artifacts to memorialize nationalism, religious iconography, and traditions that authorize the Sinhalese Buddhist Sri Lankan Identity. As a result, these narratives limit the acceptance of who counts as Sri Lankan thus furthering ethnic hierarchy relationships transplanted from Sri Lanka and the erasure of experiences or narratives in Sri Lankan culture that are different than the dominant experience.

Rohrer, Emilee

Institution: *CA - California State University - Fullerton*

Discipline: Education

Author/Contributors:
Emilee Rohrer

Abstract Name: **Capturing the Nuances of Written Language Learning in Five Beginning Writers**

The purpose of this study is to examine generative and narrative writing samples collected over a school year from five high school students with complex communication and learning needs and reveal elements of change/non-change in idea generation, vocabulary usage, and other evidence of word, sentence, or paragraph development. These five consented students participated, for the first time in their school career, in the daily classroom delivery of a comprehensive literacy curriculum piloted and co-taught by a special education teacher and a speech language pathologist. Before study, the five participants tested below the 1st percentile on standardized expressive and receptive language scores. The school team found the students eligible for individualized education program plans, and placed them in a more restrictive and separate learning environment. The five participants were learning foundational components of comprehensive literacy instruction in efforts to build their written language skills before graduation. All participants had access to a class-wide aided language system in the form of 36 highly useful core words along with access to relevant content vocabulary associated with the piloted instructional curriculum. The student's writing samples will be descriptively analyzed using the Developmental Writing Scale, the Readtopia Writing Rubric, and other SLP-generated informal assessments meant to examine change in the essential components of generative and connected text (narrative or expository). Analysis will include evidence/non-evidence of any progression in the students' narrative or expository writing over a school year. To date, 25 writing samples have been collected that represent these five student's beginning writing from September 2021 to December. Results of a systematic qualitative content analysis will be shared with conference participants.

Rojas, Juan

Institution: *FL - Miami Dade College*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Juan Rojas

Abstract Name: **Enhanced Wind Energy**

Wind energy is a source of inexhaustible renewable energy that utilizes wind turbines to produce electricity. However, the development of new mechanisms and techniques to improve the efficiency of this method is still a matter of interest for environmental researchers. Motivated by these questions, this research focuses on optimizing the amount of energy generated by windmills by creating a structure that concentrates the air currents. The rationale behind this proposal lies in the fact that the velocity at which the blades of the mill rotate increases, resulting in generating more electricity. To suitably concentrate the air currents, we considered two types of structures: cylindrical and conical. After creating different prototypes of the structure and conducting several experiments in which positions with respect to the windmill and magnitudes were evaluated, we noticed that the energy produced by the windmill varied as well. This proves that there is a correlation between the energy generated by the mills and the concentration of air currents. Therefore, we focus on determining optimal values for the parameters of the structure, namely, the diameters of the structure and its positioning. Our study indicates that the conical structure provides the highest concentration of air currents, thereby optimizing the amount of energy generated. Our findings can be used to enhance the efficiency of windmills around the world, placing wind energy as one of the most efficient types of energy.

Rojas, Lesslie

Institution: *CA - University of the Pacific*

Discipline: Economics

Author/Contributors:
Lesslie Rojas

Abstract Name: **Poverty Cycle: The Effectiveness of Government Intervention in the Phenomenon of Chronic Unemployment**

The Poverty Cycle is an intricate problem with an indefinite solution. Various attempts have been made by the government to mitigate and help eliminate the factors of poverty that keep individuals from climbing the socioeconomic ladder of the United States, namely unemployment. Thus, this study will explore the outcomes of TANF (Temporary Assistance for Needy Families) eligibility requirements and structure on unemployment and transition out of poverty. This research will review previous studies to better comprehend the possible challenges, setbacks, or irregularities during and after individual participation in TANF. These studies include existing social work research done to identify the employment and earning outcomes of TANF beneficiaries, existing research on different state implementations of TANF, and existing research on TANF turnouts in comparison to those who participated in AFDC (Aid to Families with Dependent Children) among other current studies. Several of these studies have employed data from the 1993 and 1996 Survey of Income and Program Participation as well as the 2002 National Survey of America's Families, with most studies being conducted after 2000. I will also be using information from Jonathan Gruber's textbook, Public Finance and Public Policy to help explain the importance of the phase-out portion of TANF; information such as budget constraints that explain individual behavior–decisions individuals make in the face of limited time and financial resources that determine their employment outcomes. By the end of this research, I anticipate the analysis of existing studies to yield a comprehension of factors that influence the success or shortcomings of TANF, with particular emphasis on long-term unemployment and transition out of poverty.

Rojas Rivera, Angela V.

Institution: *VA - George Mason University*

Discipline: Nursing/Health Science

Author/Contributors:
Angela V. Rojas Rivera,
Purva Gade,
Marissa Howard

Abstract Name: **Primary Breast Cancer Communication with the Sentinel Lymph Node via Extracellular Vesicles Regulates Distant Metastasis**

Triple-negative breast cancer (TNBC) is a highly aggressive form of breast cancer that can be defined by the absence of estrogen, human epidermal growth factor 2, and progesterone receptors. With no effective targeted therapy for this dreadful cancer, it is an incredibly important area of research in order to reduce suffering and increase survival for TNBC patients. Metastasis is the major cause of suffering and death for TNBC. We are investigating the mechanisms by which the primary triple negative breast cancer can regulate distant metastasis at its local draining lymph node. Our novel approach is to examine the communication between the primary tumor and its lymph node mediated by extracellular vesicles (EVs) . EVs are lipid bound bodies that cells release under stressed conditions or during normal growth. Our data indicates that there are different kinds of EVs that are released by the primary tumor to enter the lymphatic drainage where they immediately go to the lymph node. These distinct types of EVs have a dramatically opposite effect on the lymph node and the establishment and growth of distant metastasis in an animal model of TNBC. We observed that when a certain class of large EVs, isolated by ultracentrifugation, enters the lymph node, it massively stimulates distant metastasis. In contrast, smaller EVs that were spun down at a much higher speed of 100K greatly suppressed the distant metastasis. Our results indicate that the mechanism is immunologically based, because the two types of EVs have remarkably different effects on the immune cell populations of the lymph node and the presence of immune suppressor cells in the distant lung metastasis via dendritic cells, macrophages, myeloid suppressor cells, and other anti-tumor immune cells. These data can offer completely new strategies for treating metastasis, the lethal aspect of breast cancer.

Rojo, Michel

Institution: ***TX - The University of Texas at El Paso***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Michel Rojo

Abstract Name: Identification of Rotifer Cryptic Species in Chihuahuan Desert populations of the Genus Hexarthra

Previous studies have shown that many rotifer species, microscopic aquatic animals, that were believed to have cosmopolitan distribution are instead complexes of cryptic species. Cryptic species have undistinguishable morphological characteristics but have considerable genetic divergence. This study focuses on delimiting potential cryptic species of the genus Hexarthra, a monogonont rotifer, found throughout Chihuahuan desert aquatic habitats. Sampling sites were not hydrologically connected and are spatially separated. Hexarthra were sampled using two strategies (1) from active populations and (2) sediment egg banks collected from temporary rock pools. Diapausing eggs of Hexarthra are commonly found in these sediments and are the product of genetic exchange. Live individuals hatching from diapausing eggs were isolated individually to produce clonal lineages and maintained under laboratory conditions until DNA extraction was obtained. Similarly, individuals from active populations were collected following a rain event to maximize recovery of unique genotypes. For one population, 20 clonal isolates were sequenced to measure the infraspecific genetic variation of the population. The genetic marker sequenced was the cytochrome oxidase I (COI) gene. To identify unique evolutionary lineages within Hexarthra, the species delimitation methods Generalized Mixed Yule Coalescent (GMYC) and Poisson Tree Process (PTP). According to the results obtained, there are about 13 putative cryptic species within populations of Hexarthra found in 17 Chihuahuan desert populations. These findings will aid our understanding of rotifer biodiversity and cryptic speciation within the Chihuahuan desert.

Rolands, Lilianna

Institution: ***WI - University of Wisconsin-River Falls***

Discipline: Biology

Author/Contributors:
Lilianna Rolands,
Makayla Mobeck

Abstract Name: Isolation of Jumbo Bacteriophages

To date, there are relatively few known phages with genomes 200kbp or greater, which are classified as jumbo phages. This is likely due to their large physical size making them difficult to isolate using traditional methods as opposed to jumbo phages being rare. Their large size makes it difficult for jumbo phages to diffuse into typical top agar and allows jumbo phages to get caught in the filters used to remove bacteria from environmental samples. The goal of this project is to isolate jumbo phages from soil samples collected on campus. To overcome the barriers to isolating jumbo phages, several changes to the typical methods of isolation were tried. Larger pore filters and chloroform were used to remove bacteria from our samples without removing large phages. Low concentration top agar was also used during isolation and purification to better allow large phages to diffuse into the media, and we favored selection of pin-point plaques that could suggest physically large phages. Several phages have been isolated using these strategies and are being analyzed using transmission electron microscopy and gel electrophoresis techniques such as pulsed field gel electrophoresis. A selection of phages will also be sequenced to determine the length of their genome. At least one phage genome will be annotated using bioinformatics tools such as Glimmer, Genemark, BLAST, Phamerator, and HHPred.

Romalia, Jaydin

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Samantha Baumgartner,
Jaydin Romalia

Abstract Name: **Charcoal Analysis of a Sediment Core from Mud Lake, WI**

The Middle-Mississippian people settled in southern Wisconsin around A.D. 1050, near what is now Aztalan State Park. The site was occupied for two hundred years until it was abandoned around A.D. 1250, however little is known about why the Mississippian people chose to leave the site. A sediment core was collected from Mud Lake in Jefferson County, Wisconsin (43.05°N, 88.92°W) in January 2014 for the purpose of developing a climate record for the Aztalan site (43.08°N, 88.86°W). A charcoal record is currently being developed from the sediment core for the purpose of examining the links between climate, vegetation, fire, and anthropogenic activities in the region over the past 2,000 years. Different types of fires produce different forms of charcoal, and classification schemes exist to differentiate between the climate-driven and human-derived fires. Charcoal is analyzed in 1 cm increments and each centimeter of sediment is extracted from the core, treated with hydrogen peroxide and sodium hexametaphosphate, sieved through 125 µm mesh, and dried at 50°C for 48 hours. Samples are counted for the presence of charcoal using a stereomicroscope and 5-50x magnification. Dating of the sediment core combines radiocarbon and lead-210 dating techniques. Charcoal from the pre- and post-settlement of the Aztalan site will aid in differentiating between human and natural fires, and other geochemical analyses completed on the core will be presented to corroborate our interpretation. This will help us develop a better understanding of the role climate played in the abandonment of the Aztalan site.

Romero, Neftali

Institution: *NC - University of North Carolina at Charlotte*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Neftali Romero *Abbey Thomas* *Luke Donovan*

Abstract Name: **Long-Term Impairments in Individuals with Chronic Ankle Instability and the Influence of Attentional Focus in Rehabilitation**

Lateral ankle sprains are one of the most common types of injuries among athletes. These sprains stretch or tear the ligaments in the lateral complex of the ankle. Once injured, these ligaments provide inadequate stability to the ankle; therefore, 40-70% of individuals who sprain their ankle will develop a condition known as chronic ankle instability (CAI). CAI negatively alters movement, decreases strength, and limits range of motion. Present rehabilitation insufficiently reduces these impairments thus requiring different strategies to break the cycle of repetitive injury. This study applies novel methods of movement-related feedback, specifically innovative internal and external focus of attention feedback (InFOCUS and ExFOCUS, respectively), to traditional rehabilitation to break the cycle of CAI. InFOCUS forces the individual to focus on their own bodily actions, which constrains movement, whereas ExFOCUS requires the participant to move based on cues in their environment, which increases adaptability. As part of an ongoing study, 12 participants were assigned to one of 3 groups: control, ExFOCUS (crosshair laser affixed to the foot), or InFOCUS (video camera). All participants received their respective feedback while completing the same strength, balance and functional exercises. Participants performed strength (inversion, eversion, dorsiflexion, and plantar flexion), dynamic balance (star excursion balance test [SEBT]), and range of motion testing at baseline and 1-week after a 4-week intervention. A repeated measures ANOVA indicated a significant time main effect for dorsiflexion strength and SEBT posteromedial reach. Participants showed less dorsiflexion strength regardless of group (baseline: 58.3715.35kg; follow-up: 50.7516.04kg; P=0.029) with improvement in SEBT posteromedial (baseline: 0.790.14; follow-up:0.870.82; P=0.031) and posterolateral (baseline: 0.710.13; follow-up: 0.810.10; P=0.023) reach directions at follow-up. This preliminary analysis suggests continued development of feedback strategies and modes of application to improve function in patients with CAI is warranted.

Romero, Rebecca

Institution: *VA - James Madison University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Courtney Forberg ,
Archer Peacock,
Rebecca Romero,
Grace Taylor,
Zach Yelich,
Stephanie Stockwell

Abstract Name: **The Future of Plastic Waste: A Multi-Disciplinary Approach**

Approximately 300 million tons of plastic waste is produced every year worldwide; only ~7-9% is recycled.The result is harmful plastic waste accumulation that negatively impacts ecosystems and communities around the world. Polyethylene terephthalate(PET) is one of the most abundant plastics due to its transparency and chemical strength. While naturally occurring PET-degrading bacterial enzymes have been identified (i.e., PETase and MHETase), their physiological requirements make them ill-suited for industrial use. We attempted to address this problem by bioengineering a chimeric PETase::MHETase protein for enhanced PET degradation. Review of recent literature revealed a collection of PETase and MHETase-optimizing mutations shown to enhance temperature and pH tolerance. Building from this work, our approach was to combine these nucleic acid changes into a single modified open reading frame (ORF) to support even greater PET degradation capabilities. The synthetic plasmid DNA construct was transformed intoE. coliand expressed to produce a novel chimeric protein. The biomanufactured product was purified by nickel column chromatography and quality-tested using standard assays. Finally, functional assays allowed us to measure PET plastic degradation. Recognizing that typical practices in life science laboratories are part of the plastic waste problem, our team explored and implemented ways to make our laboratory—and others like it—more sustainable. Additional methodologies from the field of STS (Science, Technology and Society) were used to consider, imagine, and develop greater understanding of the implications of plastic waste and how a bioremediation-based solution might be implemented in the future.

Romero Moskala, Natasha

Institution: *VA - Virginia Commonwealth University*

Discipline: **Political Science**

Author/Contributors:
Natasha Romero Moskala

Abstract Name: **Hugo Chavez and the United Socialist Party of Venezuela: Expropriations and Censorship**

Following Former Venezuelan President Hugo Chavez's coup d'état in 1999, Chavez's United Socialist Party of Venezuela began expropriating successful private companies and censoring media outlets that accused the political party of corruption in order to dismantle the country's democratic structure and instate a government-controlled economy. Examining the Bolivarian movement led by Hugo Chavez, this study analyzes Chavez's strategy to centralize the economy and isolate the country from unregulated media accessand how these have contributed to the country's current political atmosphere. In order to understand the factors that have contributed to Venezuela's political and economic conditions today, I examined scholarly journal articles published by Venezuelan and American scholars that discuss the effects Chavez's social and economic policies had on the Venezuelan economy. Specifically, how the politicization of the country's largest oil company, Petroleum of Venezuela, contributed to the country's economic decline. I found that the censorship of media outlets created a wave of misinformation and ignorance, particularly in rural areas of the country. This has led the people to justify the United Socialist Party of Venezuela's corrupt practices and continue supporting the party despite the decline in quality of life under Chavez's regime. The United Socialist Party of Venezuela appoints political elites to leadership positions in expropriated companies not because of their expertise but due to their loyalty to the Bolivarian revolution and its agenda. Thus, the Venezuelan economy has become centralized and stagnant, leading to hyperinflation and low exchange rates.

Rong, Wang

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Santiago Tzintzun *Wang Rong* *Elizabeth Glogowski*

Abstract Name: **Characterization of Structure-Property Relationships of Stimuli-responsive Copolymers**

This research focuses on the characterization of structure-property relationships of stimuli-responsive copolymers for applications as dispersants in architectural coatings such as paints, primers, and stains. Stimuli-responsive polymers can dramatically change their physical properties in response to small changes in their environment. An important change in properties can be seen at the cloud point, the temperature where the polymer becomes insoluble in aqueous solution and indicates self-assembly or aggregation of the polymers. Copolymers with varying compositions were synthesized using Activator Regenerated by Electron Transfer Atom Transfer Radical Polymerization (ARGET ATRP), a synthesis technique that allows for narrow control of the molecular weight of the copolymers. Nuclear Magnetic Resonance Spectroscopy (NMR) and Gel Permeation Chromatography (GPC) were used to confirm the polymer structure and molecular weight dispersity. Polymer solubility and self-assembly were measured using Ultraviolet-Visible Spectroscopy (UV-Vis) and Dynamic Light Scattering (DLS) as a function of temperature, pH, ionic strength, polymer composition, and polymer concentration. These copolymers dramatically change solubility as a function of temperature and pH because of the tertiary amine. At low pH and low temperature, hydrogen bonding with water dominates behavior, so the polymers are water soluble. As pH or temperature is increased, the intramolecular forces control behavior, so the polymers become insoluble in water. The copolymer composition will shift at what specific temperature the solubility changes. Understanding structure-property relationships of these stimuli-responsive copolymers allows for optimization in applications. Stimuli-responsive polymers with these unique properties could be used as dispersing agents as a novel alternative to current commercial agents.

Ronsivalle, Caroline

Institution: *PA - University of Pittsburgh*

Discipline: Nursing/Health Science

Author/Contributors:
Caroline Ronsivalle *Lisa Tamres* *Lana Chahine,*
Sherri Mosovsky *Jennifer Lingler*

Abstract Name: **Reflections of illness identity in language choices among African Americans affected by Parkinson's Disease**

Background: Understanding how individuals from under represented communities form illness identities is fundamental to effective, culturally responsive nurse-patient communication. Purpose: To characterize patterns of language used by patients with Parkinson's disease (PWPD)and their caregivers, who identify as Black or African American, when discussing their experiences with PD symptoms and treatment. Methods: Using qualitative description, we analyzed verbatim text from remote interviews withtwo PWPD, one who had been diagnosed for 2 years and one for 14, both of whom held Master'sdegrees. Data were also analyzed from five PD caregivers ranging in age from at least 30 to over60 years old, with education levels ranging from high school to Bachelor's degrees. Their length of time caregiving ranged from three months to four years. Interviews about patients' and caregivers' experiences were coded and categories were generated to identify language patterns used when referencing PD. Results: There were two overarching categories of language used when referencing PD duringthe interviews: label-focused and emotion-focused. Label-focused language was explicit and spanned from acceptance to rejection of the medical diagnosis label of PD, often personifyingPD (e.g., "the silent killer"). Emotion-focused language reflected feelings of fear, loss of control,and confusion. These illness identities emerged within the context of discussion of PD disease progression and personal unfamiliarity. Participants also noted that concerns about privacy andfear of the unknown are common in their community. Conclusions and Implications: Disease progression and unfamiliarity may be acting to create feelings of confusion and fear, which are reflected in the language patterns of PWPD and their caregivers. Nurses should be aware of the potential for language choices (e.g., rejection of adiagnostic label) to reflect patient or caregiver's feelings concerning a diagnosis. Culturallyresponsive approaches are needed to promote effective communication among patients and caregivers from underserved communities.

Roozen, Kerrie

Institution: *MN - St. Catherine University*

Discipline: Public Health

Author/Contributors:
Kerrie Roozen *Ambria Crusan*

Abstract Name: **Culturally Appropriate Fruits and Vegetables for Cardiovascular Disease in Hispanic/Latinx Populations**

The Hispanic/Latinx population is disproportionately affected by food insecurity and risks of cardiovascular disease (CVD), which can increase if individuals are acculturated to a Westernized diet. Few studies assess food preferences and medical nutrition therapy related to Hispanic/Latinx communities, resulting in difficulty treating individuals appropriately and effectively via nutrition interventions like the Dietary Approaches to Stop Hypertension (DASH) diet. The effectiveness of the DASH diet in research consists of predominantly western food choices conducted on white males. We aim to determine preference-based fruits and vegetables for nutrition boxes distributed to patients of a community health clinic in Minnesota who are uninsured and live within 200% of Federal Poverty guidelines. The objective is to promote adherence to a DASH diet, reduce markers of CVD, reduce food insecurity, and provide meaningful inclusion to medical nutritional therapy for immigrant, Hispanic/Latinx populations. Utilizing community-based participatory research practices, a 21-question survey addressing patient demographics, social determinants of health, and a literature review-informed fruit and vegetable preference list was administered to 46 patients of varying countries of origin who self-identified as Hispanic/Latinx. Of 36 women (78.3%) and 10 men (21.7%) surveyed, Mexico was the primary country of origin (n=30). A majority of the participants surveyed had an education level of high school graduate or below (58%). In the patient sample, 46.3% reported food insecurity within the last 12 months. The highest preferences for fruit were mango (57.8%), watermelon (51.1%), and banana (44.4%), and vegetable preferences included tomato (43.2%), cucumber (43.2%), and lettuce (38.6%). Food insecurity prevalence is high compared to the US average. These results informed the contents of DASH-diet focused medical nutrition boxes for a clinical trial to lower markers of CVD and tailor culturally appropriate interventions for Hispanic/Latinx individuals.

Rosales, Ian

Institution: *IL - North Central College*

Discipline: Biology

Author/Contributors:
Nicole Baker *Ian Rosales* *Lucia Vera*

Abstract Name: **Quantifying the Relationship Between Arbuscular Mycorrhizal Fungi and a Native and Invasive Thistle**

Our research explored the relationship between arbuscular mycorrhizal (AM) fungi and two prairie plants – the native Pasture Thistle (Cirsium discolor) and the invasive Canada Thistle (Cirsium arvense). AM fungi associate with the majority of plants and assist in mineral nutrient uptake. In return, they receive photosynthetically fixed carbon from host plants. Their relationship with plants can be quantified by assessing dependence upon and responsiveness to AM fungi. Dependence is defined as the plant's inability to grow without AM fungi while responsiveness is the growth difference between inoculated and non-inoculated plants. We hypothesized that Pasture Thistle would have a stronger responsiveness and dependence on AM fungi than Canada Thistle because of the degraded mutualism hypothesis, which states that invasive species do not associate with local mutualists as closely as native plants. To test this hypothesis, we grew plants with and without AM fungi at ten different soil phosphorus levels, with twelve replicates per treatment. We measured the longest leaf length and height weekly, and after 10 weeks of growth, determined overall root and shoot biomass. We found that Pasture Thistle and Canada Thistle could both grow without AM fungi. Pasture Thistle was more responsive to AM fungi, growing 37% better when inoculated than when not inoculated, while Canada Thistle, showed a negative responsiveness. These results support our hypothesis that the invasive species would have a degraded mutualism with AM fungi. It is likely Canada Thistle lacks a strong relationship with AM fungi because it grows in disturbed areas where there is a low AM fungal presence.We also found that Pasture Thistle was most responsive at a soil phosphorus level similar to that in its native range, suggesting that it likely has a shared evolutionary history with AM fungi.

Rosecrans, Jacob

Institution: *MO - Missouri State University*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Jacob Rosecrans

Abstract Name: **Abstract For the Proposal of Blended Housing**

In 2022, the Missouri House of Representatives criminalized homelessness with House Bill 1606. Street camping and tent cities were outlawed; concurrently,funding for nonprofits that provided permanent housing to the unhoused was eliminated. The researcher will propose a new model of housing blending transitional and permanent housing while also exploring past solutions to homelessness; the proposed model of blended housing ensures permanent housing providers of Missouri retainstate and federal funding that would otherwise be eliminated.The researcher's proposal is informed by preliminary research done with the unhoused, Bronta Chapman, Nate Schlueter, Alix Midgley, and other nonprofit leaders nationwide, and a control population of college students with no experience with the unhoused. Secondary analysis was done of existing research by the Cicero Institute ofAustin, Texas, the accompanying proposal, and the effects of the proposal in Austin, Texas where similar legislation was passed.

Roseen, Madison

Institution: *MN - Hamline University*

Discipline: **Biology**

Author/Contributors:
Leif Hembre,
Madison Roseen

Abstract Name: **Are paleoecological reconstructions of zooplankton communities using chitinous remains biased?**

Chitin is a polysaccharide polymer that provides structural integrity to the exoskeletons of arthropod animals (e.g., insects, crustaceans) and is therefore one of the most abundant biologically-produced substances in the world. Because of chitin's strength and its resistance to degradation, the chitinous remains of zoo plankton and other arthropods deposited over time in lake sediments have been used by paleoecologists to understand how lake food webs have changed over long periods of time. While paleoecological studies using chitinous remains from dated sediment cores have the potential to reveal long-term changes in lake ecosystems, a critical assumption when interpreting these data is that the remains found in sediments of different age accurately reflect the circumstances that were present at the time that those sediments were deposited. However, if chitin concentrations in the remains differ among species and/or degrade differently over time, this critical assumption would be invalid, and could cause researchers to draw misleading conclusions about how ecological communities have changed over time. For this study, we used a colorimetric chitinase assay (the Schales method) to assess chitin concentrations of the remains of two types of freshwater zooplankton (Daphnia and Bosmina) from freshly-molted exoskeletons and from chitinous remains extracted from lakes sediments of known age. Based on results from a previously conducted paleoecological study, we hypothesized 1) that chitin levels in more recently deposited remains would be higher than for older remains, and 2) that the exoskeletons of Bosmina would be richer in chitin than for those of Daphnia. To date, we have successfully optimized the methodology for running the chitinase assay with consistent results, but have not obtained enough data on the chitin levels in the Daphnia and Bosmina remains to fully assess our hypotheses.

Rosinsky, Samantha

Institution: *CA - California State University - Channel Islands*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Catherine Perez *Samantha Rosinsky* *Melissa Soenke*

Abstract Name: **The role of COVID-19 in anti-Asian prejudice**

Terror management theory (TMT; Greenberg, Pyszczynski,; Solomon, 1986) states that reminders of death create the potential for anxiety, but a way to keep this anxiety managed is through cultural worldviews, self-esteem, and relationships. Cultural worldviews, like religion or political beliefs, involve having shared beliefs about reality that can provide a basis for self-esteem and a sense of immortality. TMT research demonstrates that reminders of death increase support for one's own worldview and hostility toward those with differing worldviews. For example, Germans reminded of death strongly preferred German products over foreign ones (Jonas et al., 2005). Reminders of death increase ingroup preference which increases one's sense of personal and group value. Recently the COVID-19 virus has caused both an increase in death reminders and prejudice, specifically anti-Asian prejudice due to stereotyped connections made between the virus and its origin in China. Comments tweeted by former President Trump calling COVID-19 the 'Chinese Virus' provide fuel for this prejudice. The present study investigates whether statements regarding the Chinese origination of COVID-19 heighten anti-Asian prejudice following reminders of death. To do this, half of the participants are reminded of their own death, while the other half are reminded of a control topic. Participants also read about the Chinese origin of COVID-19 or an article about COVID-19 that doesn't mention the origin of the virus. For the dependent variable, participants complete a measure of anti-Asian prejudice. The hypothesis for this study is that reminders of death will heighten anti-Asian prejudice for those participants who read the article mentioning the Chinese origin of COVID-19 compared to those not reminded of death or the Chinese origin of COVID-19. The results of this study will help us to better understand the causes and consequences of prejudice.

Ross, Jared

Institution: *NC - Western Carolina University*

Discipline: **Philosophy/Religious Studies**

Author/Contributors:
Jared Ross

Abstract Name: **A Desire for Suffering: Escaping the Good Life through Camus and Sartre**

This paper explores the complex relationship between suffering and a person's optimism for the good life, defined for my purpose as a state of general happiness and prosperity. In Lauren Berlant's Cruel Optimism, they establish optimism as a complex series of promises provided by an object of desire. Optimism becomes cruel if some of those promises are problematic, and becomes dangerous when tied closely to political objects. From Berlant's work, I will argue that as an object of desire, the good life can create a state of mental suffering when its attainment is tied to political objects containing harmful promises. I propose that to escape this conflictive state of suffering, internally redefining what constitutes attaining the good life is necessary. Relying on the works of both Camus and Sartre, I attempt to prove the compatibility of their philosophies regarding freedom, and that the freedom they propose offers a route to internal redefinition. By accomplishing this redefinition through the freedom these two philosophers establish, the potential for escaping suffering becomes possible, so long as the new process of attainmentis no longer tied to problematic political objects. I conclude by arguing that, despite Camus and Sartre's philosophies placing heavy emphasis on the individual, they ultimately suggest the value of community and its place in attaining the good life.

Ross, Kylie

Institution: *MN - Hamline University*

Discipline: **Biology**

Author/Contributors:
Kylie Ross,
Jodi Goldberg

Abstract Name: **Assessing the Tiny Earth ESKAPE Microbes for Toxicity in a Human Fibroblast Cell Line**

According to the National Institutes of Health, cancer was the second leading cause of death in the US from March 2020 to October 2021. Major treatment options for those diagnosed include surgery, chemotherapy, and radiation, which are expensive and stressful to the body. Improvements to those therapies have been made since their discovery, but they remain quite expensive and inaccessible to those who cannot afford them. One solution is the development of new therapies that focus on bacteria and their effects on cancerous environments. This was the focus of research conducted over the summers of 2021 and 2022. Findings from 2021 identified data that indicated a dose dependent decrease in colon cancer cell health as inactivated bacterial concentrations were added. Research from 2022 served to answer the question: “Is the dose dependent decrease in cell health specific to cancer cells only, or is a similar trend observed in non-cancerous fibroblast cells?” Fibroblast cells are the most common type of connective tissue cell, are found throughout the body, and serve as the control for this research. Testing on the fibroblasts utilized an MTT assay which measures a cell’s metabolic activity, or energy production. The cells take in a yellow compound, MTT, and turn it into a purple compound, formazan, with their mitochondria. Formazan can be measured using a spectrophotometer to determine its quantity based on how purple the solution is. More formazan is perceived to mean healthier cells because their mitochondria are more active and converted more MTT. Results for this research project indicated no harmful effects of the bacteria on the fibroblast cells, and instead showed increased health with higher rates of formazan production. These advancements provide support for further development of potential cancer therapies that are more accessible and less expensive than traditionally used therapies like chemotherapy and radiation.

Ross, Shaqyna

Institution: *MI - Wayne State University*

Discipline: **Nursing/Health Science**

Author/Contributors:
Shaqyna Ross

Abstract Name: **Medical mistrust amongst ethnic minority adolescents and emerging adults.**

This paper examines two large overlooked minority young adult groups in America whom experience racial discrimination in healthcare.This paper argues that the effects of trust in a provider are associated with medication adherence, continuity of care, improvements in self-reported health, and decision making when seeking care. Racial discrimination in health care access and quality of care has resulted in a long standing and ongoing medical mistrust of health care providers and the health system for many racially demean groups. Adolescents and emerging adults are very important considering youth are beginning to become more independent and are taking on greater responsibility for their own health care. Medical mistrust studies have predominantly been studied in adult populations, but there has been a huge gap in the research studying medical mistrust in youth which is where early intervention can clearly be beneficial. Due to mutually dependent challenges that minority youth face such as racial discrimination, environments with social disadvantages, and medical mistrust they often have social complex. With this being said minority youth often have a lot of involvement with health care systems from multiple different access sites, but this leads to them often failing to achieve positive health outcomes. To gauge medical mistrust, surveys will be given to minority youth between the ages of 16 to 18 years old and 19 to 25 years old in clinic settings and in the community. The population the survey will be given to will include African Americans, Latinos, Arab Americans, and Bengali youth in metro Detroit,Hamtramck,and Dearborn. There are studies that look at the concept of adolescent trust in their providers, and also how it relates to the youths' health outcomes. It's shown that youth with higher levels of trust in their provider consistently receive more chronic illness care than those who receive medical mistrust.

Roth, Jenna

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Josh Zupanc,
Pablo Garcia,
Jenna Roth,
Brynn Daniels,
Nick McFadden,
Cameron Stensen

Abstract Name: Smartphone Use and Well-being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. This study will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.

Rottier, Casey

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Erica Kladar *Jesse Castellanos-Martinez* *Connor Garland*
Casey Rottier

Abstract Name: An Updated Examination of Climate Change Views Among Wisconsin College Students Using Surveys Conducted in 2023

Climate change (CC) is perhaps the most important issue of our time. Citizen public opinion will likely be a significant determining factor regarding if/when CC mitigation policies will be enacted. Additionally, news media reports suggest that young people, including college students have been increasingly active in terms of calling for action to address CC. We will conduct surveys of Wisconsin (WI) college students in February 2023 with the expectation of receiving at least 600 completed surveys from at least three institutions to provide a current account of CC views among WI college students. A CC index (CCI) score will be calculated using responses to questions about if CC is happening and what are its primary causes as well as an understanding of CC science and concern about and obligation to act regarding CC. CCI scores range from -10 to 10 with higher scores indicating more alignment with the scientific realities of CC. This poster will present comparisons of CC views based on age, gender, major and political ideology as well as across the different institutions including ordinary least squares regression analysis. Because we have not collected the data yet, we cannot report any results at this time. For context, our poster will also compare the CC views from these 2023 WI college student surveys to the CC views expressed in previous surveys conducted among UW-Eau Claire (UWEC) college students in 2017, 2018, 2021 and 2022. Lastly, we will provide additional context by comparing the CC views from all of our WI college student surveys to similar work we have done comparing CC views between American and Chinese citizens from multiple survey years. This poster is connected to another submitted poster analyzing data from surveys conducted of both UWEC college students and also Chinese and American citizens in prior years.

Roubinek, Lillian

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Lilli Roubinek *Jeremiah Rumsey* *Megan Schiller*
Peng Tan

Abstract Name: Investigating Trends and Patterns in Climate Change Views of UW-Eau Claire Students Using Survey Data from 2017, 2018, 2021 and 2022

Climate change (CC) is perhaps the most important issue of our time. Citizen public opinion will likely be a significant determining factor regarding if/when CC mitigation policies will be enacted. Additionally, news media reports suggest that young people, including college students have been increasingly active in terms of calling for action to address CC. Surveys were conducted among UW-Eau Claire (UWEC) college students in 2017, 2018, 2021 and 2022 (N=475) to provide a case study of college student views on CC. A CC index (CCI) score was calculated using responses to questions about if CC is happening and what are its primary causes as well as an understanding of CC science and concern about and obligation to act regarding CC. CCI scores range from -10 to 10 with higher scores indicating more alignment with the scientific realities of CC. Our poster presents CCI score comparisons across years as well as by age, gender, major and political ideology including an ordinary least squares regression analysis. We will provide additional context by comparing our UWEC student results to similar work we have done comparing CC views between American and Chinese citizens from multiple survey years. Our findings suggest that UWEC students are more aligned with the scientific realities of CC compared to both American and Chinese citizens overall. Moreover, although the variation in CC views among UWEC students is less than for American citizens overall, it is greater than what we see among Chinese citizens. Lastly, our results also show a similar political pattern in UWEC student CC views as what we find among American citizens overall with conservatives/liberals being the least/most aligned with the scientific realities of CC respectively. This poster is connected to another submitted poster analyzing new data from surveys conducted of WI college students in 2023.

Rouse, Madison

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Psychology/Neuroscience

Author/Contributors:
Madison Rouse

Abstract Name: Examining the relationship between adolescent intercultural sensitivity and White identity development

Intercultural sensitivity refers to an individual's ability to step beyond their own culture and function with other individuals from diverse backgrounds.It has been proposed that intercultural sensitivity is a developmental process comprised of six stages, each of which fall into one of the two following categories: ethnocentric and ethnorelative. The stages in the ethnocentric category indicate a self-centered reality, while the stages in the ethnorelative category represent a multicultural acceptance approach. Much of the previous research conducted on intercultural sensitivity has not explored the concept within an adolescent population.This study looks at the relationship between stage of adolescence and intercultural sensitivity views. To investigate these relationships in older adolescents, 91 students were recruited from various psychology courses at a small Midwestern public university. Participants completed the 30-item Intercultural Sensitivity Index and the 60-item White Racial Identity Attitudes Scale.For the middle adolescent age group, participants will be recruited through local schools in early 2023 and will complete the same two measures.We predicted that younger adolescents would have intercultural sensitivity views that fall largely into the stages of ethnocentrism, while older adolescents would have more varied intercultural sensitivity views and will likely fall into the transitory or ethnorelative worldviews. The results of the analyses conducted for the older adolescent group did indicate that their views fell primarily into the ethnorelative category. Based on these results, it is anticipated that the analyses conducted for the younger adolescent group will likely reveal that their views fall mainly into the stages of ethnocentrism.This research gives insight into our current and future student population and serves as an incentive for improvement to intercultural competency within that population. Increasing underrepresented minority enrollment means that improved intercultural competency will be advantageous for all.

Roverato, Nevaeh

Institution: *NC - University of North Carolina at Pembroke*

Discipline: **Biology**

Author/Contributors:
Nevaeh Roverato,
Silvia Smith

Abstract Name: **In silico analysis of the doublecortin domain containing 2B (DCDC2B) gene in pulmonary fibrosis.**

Lung fibrosis is an irreversible scarring of the lungs, which may lead to death in a matter of a few years if untreated. The pathophysiology of lung fibrosis implicates different and complex molecular pathways and is likely genetically driven. We analyzed whole exome sequences of 750 lung fibrosis patients and related and unrelated unaffected controls and have identified several genes that contain likely pathogenic variants in this cohort, some of these being novel variants. In this study, we characterized the role of one of these novel genes, the doublecortin domain containing 2B (DCDC2B) gene, in pulmonary fibrosis. DCDC2B is located on chromosome 1 and is broadly expressed in the lungs. We used Ingenuity Pathway Analysis (IPA)® (Qiagen) to conduct an in silico analysis of the role of this gene in the pathway of lung fibrosis. We contextualized the role of this gene in the pulmonary fibrosis canonical (i.e., established) pathway generated by IPA®. by conducting an in-depth literature review. We determined that this gene regulates endoplasmic reticulum (ER) protein folding and storage, causing 'ER stress' - a process already implicated in lung fibrosis, via different genes. ER stress in the alveolar epithelial cells type II predisposes the lung epithelium to an increased risk of injury and subsequent fibrosis in the event of a secondary insult like a viral infection, trauma, or exposure. Thus, our study is the first step in identifying novel genes implicated in lung fibrosis. Further studies will be needed to confirm the role of this gene in the molecular pathways of pulmonary fibrosis.

Roveri, Alexa

Institution: *NC - Elon University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alexa Roveri,
Benjamin Evans

Abstract Name: **Magnetic Microparticle-Silicone Composites for Hyperthermia Therapy on Implantable Medical Devices**

Implanted medical devices such as joint replacements and implants following mastectomy have limited lifetimes, and their most common cause of failure is due to the growth of bacterial biofilms on their surfaces. One way to address this issue would be by heating the surface of the device within the body in order to eliminate the bacteria, preventing infection and inflammation. The heat, however, needs to be delivered directly to the surface without affecting nearby tissues. Localized heating may be accomplished by inserting magnetic particles directly into the implanted device. Our lab has developed a novel magnetic silicone composite that can be heated remotely with magnetic fields that are able to pass through healthy tissue with no effect. In this study, we have inserted the magnetic silicone into a material that mimics human tissues, known as a tissue phantom, which was then used to investigate the effect of magnetic heating on surrounding tissues using alternating magnetic fields to heat the particles and the internal surfaces remotely. The tissue phantom was constructed from polyacrylamide gel with a thermochromic dye incorporated to measure temperatures inside the tissue phantom. The thermochromic dye allowed us to visualize temperature profiles indicated by a color change occurring when a certain temperature within the tissue phantom was reached. These temperature profiles help determine if substantial tissue damage resulted from magnetic heating. Our expectation is that this research may contribute to a novel method of addressing bacterial films in implanted medical devices, leading to longer-lasting devices and better outcomes for patients.

Rowland, Indigo

Institution: *MN - Hamline University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Indigo Rowland *Jamie Spaulding*

Abstract Name: **Rehydration of Aged Latent Fingerprints on Non-Porous Surfaces**

In forensic science, fingerprints are an important resource for individualization. They are integral to linking suspects to crime scenes and therefore either convicting or exonerating individuals. However, our ability to develop fingerprints decreases over time due to the rapid evaporation that occurs as a fingerprint ages. Unfortunately, although there are methods to develop aged fingerprints on porous surfaces, there is not currently a method for developing aged latent fingerprints on non-porous surfaces. This is detrimental because the majority of fingerprints at a crime scene are on non-porous surfaces. The purpose of this project was to explore the effectiveness of and derive a method for the rehydration and development of high-quality latent fingerprints located on glass and plastic, two non-porous surfaces. This study sought to develop a technique for rehydrating aged latent fingerprints using a humidifier. Fingerprints were aged on the substrates for an hour before being placed in a sealed chamber with a humidifier. A range of 80-85% relative humidity was maintained within these chambers for the duration of the rehydration. Within the chamber, the fingerprints absorbed water from the air, thus restoring their quality. After rehydration was complete, the fingerprints were imaged and 4-8 ridge widths were measured per print. Those same ridges were measured in an image taken immediately after print deposition and compared to the post-rehydration widths to determine the degree of rehydration. The data revealed that peak rehydration occurred after 30 minutes on glass and 15 minutes on plastic. This research has important implications in overcoming the reporting, collection, and analysis delays that plague the forensic science community as it will allow forensic scientists to develop latent fingerprints from every case, regardless of how much time has elapsed since fingerprint deposition, and therefore ensure that all evidence at a crime scene can be collected and analyzed.

Rowlands, Kai

Institution: *WI - Marquette University*

Discipline: Physics/Astronomy

Author/Contributors:
Kai Rowlands *Jax Sanders*

Abstract Name: **Investigating Observational Improvements For Future Gravitational-Wave Detectors Using Tuned Interferometry**

This project investigates the potential of extending the signal recycling capability of the current Laser Interferometer Gravitational-Wave Observatory (LIGO) configuration to enhance gravitational wave detectability at specific frequencies of interest. This method can be applied to planned future interferometers, such as A+, Cosmic Explorer, and Einstein Telescope. Still, it can also be implemented in the Advanced LIGO interferometer to improve astronomical examinations of GWs during the research and development of future instruments.By adjusting the position (tune-phase) as well as the transmissivity of mirrors located in the instrument, we find that we improve the sensitivity at specific frequency ranges. This allows for frequency-dependent sensitivity improvements for GW measurements – just like putting a filter on a telescope. In this work, we investigate tune-phase and transmissivity combinations and their respective ranges of improvement, with the aim of determining optimal configurations for application to gravitational wave astronomy. We expanded the pygwinc fundamental noise calculation package to calculate the effects of the various tune-phase and transmissivity combinations on the sensitivity of the interferometer. Additionally, we applied 196 usable pulsar spin-down limits from Abbott et al. 2021 to quantify the effectiveness of the tune-phase and transmissivity pairs. The optimal combinations demonstrate possible improvements on pulsars and open the project for comments and extensions on black hole binaries.

Roy, Tracy

Institution: *TN - Trevecca Nazarene University*

Discipline: Nursing/Health Science

Author/Contributors:
Alex Webster,
Tracy Roy

Abstract Name: **Compression and Contact of The Glenohumeral joint; a Cadaveric Study Comparing Angles of Internal and External Rotation**

Previous research has indicated that immobilization in external rotation for shoulder dislocation may reduce the recurrence rates of dislocation and instability of the Glenohumeral Joint (GHJ). The purpose of this research is to calculate the extent to which the humeral head is in contact with the glenoid fossa and the amount of pressure it applies in various positions of immobilization while comparing it to geometric analysis calculations. To accomplish this, we will be performing cadaver-based research using manipulation of the joint position as the primary independent variable. The joint will be positioned between 50° and 60° of internal rotation accompanied with adduction of the arm for the internal rotation measurements. For the external rotation portion, we will be measuring in multiple angles from 0° to 45° combined with abduction. The total contact and compression of the humeral head in the glenoid fossa will be measured using a Trill capacitive touch sensor. The geometric analysis involves measuring the superoinferior (SI) diameter of the humeral head, anteroposterior diameter of the humeral head, radius of curvature of the humeral head, humeral head retroversion, humeral head thickness, inclination angle, critical shoulder angle, glenoid width, glenoid length, and radius of curvature of the glenoid. Comparing our GHJ analysis with a geometric analysis will provide insight into possible reasons for the advantages of external rotation for anterior shoulder dislocation immobilization.

Royce, Noah

Institution: *WI - University of Wisconsin-Stout*

Discipline: Mathematics

Author/Contributors:
Noah Royce

Abstract Name: **Analysis of Differential Equation Models of Kidney Bean Yield**

Current trends in farming are pressuring growers to generate higher crop yields with fewer resources. This pressure necessitates embracing precision agriculture, using data and science-based practices that are targeted at the micro-environments on the field level, to increase a grower's overall efficiency. Chippewa Valley Bean (CVB), located in Menomonie, Wisconsin is the world's largest processor of dark red kidney beans and works with growers all over Wisconsin and the Upper Midwest. Their agronomy team is looking to incorporate more precision agriculture to help their growers deliver higher yields of higher quality beans.CVB's agronomy team tasked us with determining the amount of water required to grow dark red kidney beans in different soil types. We developed a mathematical model consisting of three coupled differential equations that tracks water in the soil, canopy, and total reproductive biomass throughout the plant's life cycle. This model serves to predict the total yield of a plant given the irrigation levels as well as the characteristics of the plant and soil type. We then used numerical experiments to identify the irrigation levels that give the maximum kidney bean yield.

Royer, Allison

Institution: *NC - Western Carolina University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Allison Royer,
Martin Tanaka,
Basel Alsayyed Ahmad

Abstract Name: **Evaluation of the Mechanical Properties of Cervidae Anterior Cruciate Ligaments, Patella Tendons, and Achilles Tendons**

The human anterior cruciate ligament (ACL) is in the knee joint and prevents the tibia (shin bone) from sliding in front of the femur (thigh bone). When the ACL is ruptured, the injury can be repaired using a replacement ligament in the form of an autograph, allograph, xenograft, or synthetic material. When replacement tissue is used it is important to understand and match the mechanical properties of the ACL tissue. In this study, deer tendons were tested to determine their ultimate strength, strain at fracture, and elastic modulus. These properties were compared across each tendon and with the physical properties of a human ACL. Cervidae (deer) tendons, including the ACL, patellar tendon, and Achilles tendon, were harvested from a local deer meat processor. The tendons were then frozen and tested later. To preserve the tendons after thawing, they were sprayed with a saline solution, and were tested for their tensile strength. The tensile test was conducted using an Instron universal testing machine. The machine recorded the force vs. displacement graph, which was used to determine the ultimate strength, strain at fracture, and elastic modulus of the tendons. The ACL had an ultimate strength of 20.7 MPa, a strain at fracture of 0.41, and an elastic modulus of 51.1 MPa. The Achilles had an ultimate strength of 16.6 MPa, a strain at fracture of 0.84, and an elastic modulus of 19.7 MPa. The Patellar tendon had an ultimate strength of 20.50 MPa, a strain at fracture of 0.467, and an elastic modulus of 43.89 MPa. It was determined that the ultimate tensile force for a human ACL was comparable to the maximum force for the patellar tendon, but higher than the Achilles or the ACL.

Rubino, Shelby

Institution: *OK - University of Central Oklahoma*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Shelby Rubino,
Ryleigh Tucker

Abstract Name: **Suicide Prevention Among Oklahoma?s Student Veterans**

In 2020, the Governor of Oklahoma issued a statewide challenge to reduce and eliminate suicide among Oklahoma's service members, Veterans, and their families. As a result of this challenge, in 2022 a survey concerning suicidal ideation among Oklahoma's student Veterans was conducted. Multiple agencies were involved in the development of the survey, including the University of Central Oklahoma, and the Oklahoma Department of Veterans Affairs.The survey contained items concerning demographics, social support, military affiliation, and academic status.Additionally, to measure depression severity, the ten items from the PHQ-9 survey (Kroenke, Spitzer,; Williams, 2001) were included. To prepare for distribution, campus Veterans offices were contacted regarding their current outreach practices.The survey was then distributed through Veterans offices at campuses across Oklahoma, including career-tech centers, community colleges, primarily undergraduate institutions, public research universities, and private institutions. In all, 105 student Veterans responded. Chi-square tests and t-tests were performed to identify factors related to suicidal ideation and major depression. Following this, a multiple regression model for predicting the overall PHQ-9 score was developed. These results will be disseminated to Oklahoma higher education institutions to assist with their outreach efforts and to bring awareness to deficiencies in their current practices.

Rubino, Sophia

Institution: *CA - Chapman University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Sophia Rubino

Abstract Name: **The Lesser Examined Coming of Age: Luchino Visconti?s Death in Venice**

This study is a combination of Simone de Beauvoir's phenomenological studies and Christopher Bollas' theories on object-relations psychoanalysis to contextualize the age-induced anxieties as revealed through Luchino Visconti's Death in Venice (1971). I will utilize Beauvoir's The Coming of Age, which focuses on the affairs of the elderly as they are disparaged by a society that problematizes and isolates their aging bodies to establish the situation of the film's protagonist, Gustav von Aschenbach (Dirk Bogarde), within a larger sociological climate. This conscious, lived-experience Beauvoir describes is the manifestation of what Bollas notes as the "generative state": a mood space that allows for a subject to regress into a former, childhood state to negotiate their current affairs, often brought forth by personal crisis. The subject, in this case, is Gustav – an aging composer who travels to Venice per recommendation of his doctor following a poorly-received concert which led to sickness. The anxiety boiling inside him becomes cooled over time with help from his generative state– communicated through the film's visual form and gesture– upon first sight of Tadzio; a boy who embodies the traditional Western standard of beauty found in the young. He further acts as Gustav's object of desire, that is a longing for both youth and the physical abilities it provides, which eventually allows for his recognition in the final sequence of life's inevitable: death. Death in Venice, in its simultaneous examination of beauty and decay, operates both as a reminder of the harm in denying one's age and a criticism of the societal antipathy that leads many, like Gustav, down a self-loathing-filled path fueled by agingand, finally, demise.

Ruble, Ella

Institution: *MN - Gustavus Adolphus College*

Discipline: Nursing/Health Science

Author/Contributors:
Hannah Hubbart,
Ella Ruble

Abstract Name: **Exploring the Perceptions of Pre-Health Students who Engage in an Interdisciplinary Approach to Learning**

Background/Significance: Interprofessional education involves two or more health professions that collectively create and cultivate a collaborative learning environment with the goal of creating skills and attitudes that result in desired team behaviors (Buring et al., 2009). Minimal opportunities exist for interdisciplinary collaboration between pre-health students at liberal arts institutions, particularly nursing and athletic training. This may potentially hinder creativity and skill development essential for successful patient care. Creative pedagogical strategies that develop interprofessional collaboration abilities are needed at institutions where there is limited opportunity for actual interprofessional collaboration. Purpose: The purpose of this research study was to explore the perception of pre-health students who engaged in an interdisciplinary approach to learning. Methods: This qualitative study utilized Elo and Kängas' (2007) descriptive content analysis approach to complete a secondary analysis of group exam reflections from an unfolding case study. Ninety-three pre-health student responses were analyzed at one rural, liberal arts college in the Midwest. The reflections consisted of two open ended questions about working in groups, focusing on the effectiveness of the group, behaviors, and application to future professional roles. This study was exempt from IRB oversight. Findings: Preliminary findings indicate that open respectful communication, open mindedness, and working with a team with different skills/perspectives were behaviors that positively impacted collaboration. Students indicated the need to integrate these behaviors when working with other health care professionals to maximize learning resulting in comprehensive patient care.

Rucinski, Jakob

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Jakob Rucinski,
John Chan

Abstract Name: **Screening Microbial Secondary Metabolites for Anthelmintic Activity**

Schistosomiasis is a disease caused by parasitic flatworms which infects over 200 million people worldwide, primarily in underdeveloped countries. There is no vaccine for schistosomiasis and the disease is currently treated with one drug, praziquantel, which was discovered in the 1970s. The possibility of resistance is concerning, with only one drug for schistosomiasis control. Furthermore, there are some infections that do not respond to praziquantel even after repeated dosing. We are exploring microbial natural products as a source of potential new antiparasitic compounds (termed anthelmintics). Microbes have a proven track record as sources of anti-infective agents for other diseases. For example, the avermectin / milbemycin macrocyclic lactones produced by Streptomyces are frontline drugs to treat parasitic roundworms. In vitro screens have shown these compounds cause schistosome paralysis and death. Following this targeted screen, we have obtained an expanded collection of microbes to screen for additional bioactive secondary metabolites. In this project, we will screen this library to identify microbes that produce additional compounds capable of killing worms. Bacterial strains are grown in liquid culture for 5-7 days and fed to worms, which are tracked for a further week to score phenotypes such as death, slowed or impaired growth, or developmental abnormalities. Future work will involve identifying the structure(s) of active compounds produced by microbes that exhibit anthelmintic activity and optimizing culture conditions for increased chemical production.

Ruden, Lily

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biology

Author/Contributors:
Lily Ruden,
Jacob Mueller,
Ivan Mier,
Martin Arlt

Abstract Name: **Elucidating the Functional Role of Mouse Retrogene Phf8l by Mapping Protein-Protein Interactions Using Yeast Two-Hybrid Screening**

A major force driving the evolution of species is the acquisition of new genes. Typically new genes evolve as gene duplication events, such as retrotransposition, where the RNA of a gene is reverse-transcribed into cDNA and integrates into a different position in the genome. Most retrogene copies become nonfunctional, called pseudogenes. However, in cases where the retrogene remains intact and is expressed, it suggests the duplicate copy is important for the evolution of that species. We hypothesize that one such retrogene, Phf8l, along with its progenitor gene, Phf8, has enhanced male germline function after meiosis. While not much is known about Phf8l, Phf8 is a well-studied ubiquitously expressed X-linked gene encoding a histone demethylase. The focus of my research is to test how Phf8l has evolved from Phf8 by assessing whether they interact with the same or different sets of proteins. Previous in-vitro experiments have found that PHF8 interacts with WDR5 and Ash2L. I will test if PHF8L interacts with these two proteins and perform a yeast two-hybrid screen of mouse testis cDNA to determine which additional proteins PHF8L interacts with in the testis. Any proteins that PHF8L interacts with in the testis, I will then test if PHF8 also interacts with them. I will complement the yeast two-hybrid interactions with predicted interactions via AlphaFold computational analysis to pinpoint where the interaction domains are within the protein. Altogether, my studies will help elucidate how PHF8L has evolved from PHF8 with respect to the proteins they interact with. My studies will help improve our understanding of how PHF8L enhances male fertility and the basis for preservation of a functional copy of this retrogene.

Rudzinski, Stephanie

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Dana Berry *Lexie Dehaven* *Stephanie Rudzinski*
Ebony Lang

Abstract Name: **Skill Assessment of Caregivers who Serve People with Intellectual and Developmental Disabilities**

This quantitative study assesses the knowledge and skill of caregivers who serve people with Intellectual and Developmental Disabilities (IDD) and explores the aspects of training they received prior and during their time serving the population. In order to test the skill of caregivers, studentresearchers created a survey with 15 qualitative and quantitative questions. There are 4 demographic questions that ask about age, gender, and ethnicity; and there are 11 questions that ask about prior experience, personal opinions of their training, and certifications. The collected data was received by sending out an electronic version of the survey to caregivers for people with IDD. Using 75 participants, this research aims to see how effective training is when used in practice. The research allows student researchers to explore solutions to maximize effectiveness. Once the data was received, it was entered into an excel coding sheet and copied into SPSS. This software provided student researchers with insight about their data based on correlations between prior training, certification and years of experience compared to their comfort level as caregivers. Student researchers used quantitative analysis such as Measures of Central Tendency, Chi-Square tests, and Correlations to find any statistical significance. The nonparametric testing that wasconducted for the research is the goodness of fit method. Student researchers thenran correlations between the variables of caregivers' age, gender, and education level.Overall, results indicate that participants felt the training they receive was beneficial, positive, and thorough (40%, n=30). The results also indicated that most of the participants had a high comfort level when it comes to caring for individuals with IDD (84%, n=63). The qualitative data is observed from open-ended questions. Student researchers intend to use these results to change training to maximize skillset and improve living conditions for people living with Intellectual and Developmental Disabilities.

Ruffin, Kendal

Institution: *CA - San Diego State University*

Discipline: Public Health

Author/Contributors:
Kendal Ruffin *Vanessa Malcarne*

Abstract Name: **Impact of Health Disparities and Prostate Cancer Among African American Men**

African American men are at higher risk of prostate cancer (PCa) compared to Non-African American men. This study identified health disparities such as socioeconomic status, education, and access to healthcare that may explain why African American men are more susceptible to this disease as well as what is being done to mitigate these barriers. A search was conducted to explore literature regarding health disparities African American men face pertaining to PCa. These articles were found using PubMed/MEDLINE, CINAHL, PsycINFO, and ERIC. Key search terms included: prostate cancer, African American men, screening, and health promotion. Year constraints were not used in the search. Reference lists were used to identify other sources from core articles. In this literature search, 35 articles were identified based on relevant titles. After reviewing each abstract, 15 articles were not relevant to the topic of interest and were discarded from the review. 20 articles were selected for a thorough review. The selected articles identified the health disparities and barriers contributing to the lack of knowledge and inaccurate beliefs pertaining to prostate cancer in African American men. Several studies indicated that African American men were less knowledgeable about the importance of early screening for PCa detection, despite African American men being at higher risk for PCa than men of other racial/ethnic groups. Studies identified the need for educational programs and interventions to encourage African American men to make more informed decisions regarding PCa screenings for early detection. Results showed a growing need for healthcare providers to encourage conversations with African American men regarding the important pros and cons of PCa screening. In summary, many African American men were unaware of their increased risk of PCa and did not have the knowledge to make informed decisions regarding early detection screening.

Rumsey, Jeremiah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Lilli Roubinek *Jeremiah Rumsey* *Megan Schiller*
Peng Tan

Abstract Name: Investigating Trends and Patterns in Climate Change Views of UW-Eau Claire Students Using Survey Data from 2017, 2018, 2021 and 2022

Climate change (CC) is perhaps the most important issue of our time. Citizen public opinion will likely be a significant determining factor regarding if/when CC mitigation policies will be enacted. Additionally, news media reports suggest that young people, including college students have been increasingly active in terms of calling for action to address CC. Surveys were conducted among UW-Eau Claire (UWEC) college students in 2017, 2018, 2021 and 2022 (N=475) to provide a case study of college student views on CC. A CC index (CCI) score was calculated using responses to questions about if CC is happening and what are its primary causes as well as an understanding of CC science and concern about and obligation to act regarding CC. CCI scores range from -10 to 10 with higher scores indicating more alignment with the scientific realities of CC. Our poster presents CCI score comparisons across years as well as by age, gender, major and political ideology including an ordinary least squares regression analysis. We will provide additional context by comparing our UWEC student results to similar work we have done comparing CC views between American and Chinese citizens from multiple survey years. Our findings suggest that UWEC students are more aligned with the scientific realities of CC compared to both American and Chinese citizens overall. Moreover, although the variation in CC views among UWEC students is less than for American citizens overall, it is greater than what we see among Chinese citizens. Lastly, our results also show a similar political pattern in UWEC student CC views as what we find among American citizens overall with conservatives/liberals being the least/most aligned with the scientific realities of CC respectively. This poster is connected to another submitted poster analyzing new data from surveys conducted of WI college students in 2023.

Runge, Sam

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: English/Linguistics

Author/Contributors:
Sam Runge

Abstract Name: Poetic Relativity in the Letters of Chevalier D'eon

The objective of our research is to study the ephemera and various letters written by 18th-century French, trans woman spy, Chevaliere D'eon, which we have found at the Houghton Library archives at Harvard University. Rather than focusing on the ephemera's historical significance, of which there is already a major shortage of research, we intend to study how these correspondences can be interpreted as poetry. We will be assessing whether something as conventionally "unpoetic" as a simple mailing address can be reread as something with its own inherent poetic value. The Whorf Hypothesis will be used to assess this linguistic relativism and the means by which we might classify poetics. Secondly, we will study how techniques such as the line break, enjambment, and majusculation can be found and classified as poetic elements, even when the context itself does not advertise itself as poetic. Finally, we intend to study the manner in which lines interact with one another and create a dialectical relationship between beginning and end.In relation to the Chevaliere D'eon herself, we intend to critically assess the concept of gender variance and how this affects the meaning of the poetic form. Gender identity is inextricably linked to how we see ourselves as individuals. Therefore, our research seeks to understand how that can influence writing and to what extent. Studying gender variance and language can lead us to a point of recontextualizing even the most seemingly inconsequential content. Locating Chevaliere D'eon "Opposite / the Adam and Eve," for example, gives us insight into the concept of positionality and the relationship between spatial poetics and gender identity. Understanding positionality in relation to poetics will allow us to create new ways of understanding through geographical planes and spatial relationships.

Rusch, Jay

Institution: *FL - University of Central Florida*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jay Rusch,
Lisa Borntrager,
Vicki Orr,
Alyssa Mason,
Kim Gryglewicz

Abstract Name: **Examining distinct suicidal crisis triggers in individuals who struggle with substance misuse**

The Substance Abuse and Mental Health Services Administration (SAMHSA) estimates that 57.2 million people, or 20.8% of the country, struggled with substance misuse in 2019 (SAMHSA, 2019). Studies show that substance misuse plays a major role in suicide risk and confers ten times higher risk of death by suicide, when compared to the general population (Esang; Ahmed, 2018). Substance misuse and suicidality are common comorbidities, which highlights the importance of safety planning and crisis intervention. There is a lack of research regarding specific triggers prior to an emerging suicidal crisis in individuals that struggle with substance misuse. This study involved 522 individuals evaluated to be at risk of suicide throughout two healthcare facilities in Florida. A correlational analysis was used to determine if there was a significant relationship between substance misuse and twenty-four possible crisis triggers in patients at risk of suicide. Group differences between those that misuse substances and those that do not were examined to determine if substance use affects triggers leading to suicidal crisis. The results found through this analysis suggest a significant relationship between certain crisis triggers (increasing use of substances, feeling restless and fidgety, relationship break-ups, financial/legal problems, health problems, feeling humiliated and ashamed) and substance misuse. These results could prove valuable in developing safety plans for those struggling with substance misuse, as well as helping to identify an emerging suicidal crisis.

Ruschman, Gretchen

Institution: *KY - University of Kentucky*

Discipline: Biology

Author/Contributors:
Gretchen Ruschman *Bridget Bolt* *Larissa Silverio-Ferrer*,
Mackenzie Goodness *Kendall Corbin* *Carlos Rodriguez Lopez*

Abstract Name: **Exogenous alteration of DNA methylation affects the plants ability to assemble its soil microbiome**

Soils are a crucial component for sustaining healthy plants and are essential to a wide range of ecosystems. Microbial communities provide multiple benefits to their hosts, including better access to nutrients, enhanced growth, and improved tolerance to biotic and abiotic insult. Plants can modify the composition of such communities via the exudation of metabolites that enhance or prevent the abundance of certain microbial species. Epigenetic mechanisms, such as DNA methylation, have been proposed as one of the interphases that regulate the interaction between microbes and their hosts. Here, we used non-targeted soil metabolome analysis, metabarcoding sequencing, and labelled immunoassays to characterize and epimutant population of soybean generated using the demethylating agent 5-Azacytidine. We hypothesized that demethylated plants (epimutants) will present a unique set of mutant epialleles which will alter the plant's metabolic machinery, resulting in an altered ability to synthesize root exudates, and therefore a unique soil microbiome. In addition to the expected modification of the plant's morphological and developmental characteristics, non-targeted metabolomic analysis showed the metabolite profiles of soils sustaining epimutant plants are significantly different from those sustaining a wild-type. Importantly, next generation sequencing results indicate that exogenous plant DNA demethylation results in a) a partial loss of the plant's ability to alter the soil microbial communities (P=0.45; T-stat= 2.73; P-val= 0.005); b) an increased variability in the epimutants capacity to alter the bulk soil microbiomes compared to the wild-types; and c) a significantly lower ability of epimutants to prevent the growth of pathogenic bacterial species and promote the growth of beneficial taxa. Taken collectively, our results support the hypothesis that DNA methylation is involved in the ability of plants to direct the assembly of its microbiota. These findings signify the importance of epimutant plant populations as a resource for the identification of plant genes regulating soil microbiota assembly.

Rush, Emily

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Emily Rush *Ashley Lange*

Abstract Name: Examining Use of a Standard Structured Meeting Agenda to Improve Learning Outcomes for Instructional Interns

BackgroundThe Instructional Internship (II) program at a Midwestern University was developed in response to the American Speech-Language-Hearing Association initiative to increase student recruitment into Ph.D. programs (ASHA, 2002) and designed to provide undergraduates with a teaching experience. This experience provides a glimpse into the daily life of a faculty member, including opportunities for teaching and mentoring students (Hemmerich, Hoepner,; Samelson, 2015). II roles are similar to that of teaching assistants. Typically, one or two IIs are assigned to a given course. IIs are undergraduate students that have already taken the course, earning an A-or better. Roles include leading weekly meetings, reviewing course content, responding to emails, and answering students' questions. IIs approach course content from a student perspective, increasing accessibility and reducing any power disparity. The experience changes II's perspectives on teaching and learning, has future implications for teaching clients/families, and develops interpersonal skills (Hemmerich et al., 2015). While associated with positive outcomes, individual experiences vary across instructors. Increasing consistency among instructors may increase consistency across II outcomes. Therefore, a standard structured meeting agenda was developed to increase inter-instructor consistency. The aim of the current study was to evaluate implementation of the structured meeting agenda.MethodsSpring 2022 IIs were recruited to participate in an online survey about their experiences with the structured meeting agenda. Quantitative results were analyzed through descriptive statistics. Open-ended responses were analyzed through collaborative qualitative analysis.ResultsMean ratings were calculated for scaled survey questions regarding use of the structured agenda. While no significant changes in approach to meeting agendas were noted, most instructors were already using a similar structured agenda. Open-ended responses were analyzed qualitatively. Instructors acknowledged that the structured agenda helped strengthen and guide the flow of the meeting, making meetings more focused, more interactive and supportive, increasing flexibility, and clarifying expectations.

Rusnak, Joshua

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Brian Teague,
Joshua Rusnak

Abstract Name: Whole-Genome Sequencing and Genomic Analysis of a Virulent Bacteriophage Infecting Providencia stuartii Bacteria

Drug-resistant infections caused an estimated 4.95 million deaths worldwide in 2019, and this number is projected to exceed 10 million by 2050. The most common method for combating antimicrobial resistance is the development of new synthetic drugs to which bacteria in turn evolve resistance. A potential alternative is phage therapy, which is the use of bacteriophages for the treatment of bacterial infection. Bacteriophages are a selective bacteria-infecting virus and one of the most common biological entities on earth. They are ubiquitous and found wherever bacteria exist. Bacteriophages are of an extremely diverse biological lineage, and their selectivity to the bacteria they infect make any uncommon bacteria a target of interest for bacteriophage research. The bacterium Providenciastuartiiis native to the western region of Wisconsin and has recently been isolated at the University of Wisconsin - Stout. Our research works to investigate potential novel bacteriophages that could infect this uncommon bacterium using locally collected environmental samples andProvidenciastuartiias a host for bacteriophage isolation and DNA extraction. These DNA samples will then be analyzed by whole-genome sequencing and bioinformatic methods.

Russo, Kathleen

Institution: *VA - Virginia Commonwealth University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kathleen Russo

Abstract Name: **Saving Brain: Progesterone and Dopamine Agonists as Potential Therapies for Secondary Neurodegeneration Following Ischemic Stroke in Men**

Secondary neurodegeneration (SND) is a phenomenon that occurs after a stroke, during which areas of the brain that were distal to the initial infarct site suffer from injury and tissue death, weeks or sometimes months after the initial incident. Current treatment of stroke and secondary neuro degeneration have limited success, and even more limited applicability, and the only widely-used drug therapy available is tPA, a thrombolytic drug effective in only 30-40% of stroke patients. I examined the mechanisms of SND, and the current research on potential novel drug therapies to minimize SND. I also researched the differences in response to treatment of SND between male and female subjects. My research shows that progesterone agonists and dopamine agonists each act on different mechanisms to limit the effects of SND, and minimize the loss of brain function in male ischemic stroke patients. Thus, further research and clinical trials should be conducted to explore the potential synergistic effects of both drugs used together.

Rutter, Nathaniel

Institution: *OR - Willamette University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Nathaniel Rutter *Jake Piesner* *Evan Wylie*
J. Charles Williamson

Abstract Name: **Laying the Groundwork for Greener Solvents: A Study of Liquid-liquid and Solid-liquid Phase Behavior of an Imidazolium-based Ionic Liquid and Benzene**

In the past few decades, the scientific community has focused on substances known as ionic liquids (ILs) which have the potential to replace traditional organic solvents. ILs are low-melting point organic salts that lack the volatility, thermal instability, and handling risks of traditional organic solvents. Thus, ILs are deemed greener alternatives. Designing applications for ILs requires an understanding of their phase behavior, especially when paired with other liquid co-solvents. In this work, samples of the ionic liquid, 1-decyl-3-methylimidazolium bis[trifluoromethyl(sulfonyl)imide] (abbreviated C10mim) were mixed with benzene over a range of mass ratios. Individual samples were prepared in flame-sealed ampules. Liquid-liquid coexistence was measured with an automated laser light scattering setup and a stir-settle process was used for more accurate data analysis. The system exhibited partial liquid-liquid immiscibility with an upper critical temperature of 40.86 ± 0.06 °C. A critical composition of wC10mim = 0.1105 was determined by analyzing 90° light scattering data for critical opalescence. Solid-liquid phase transitions were determined using temperature control down to −40 °C in an insulated dewar. Samples were taken from a heterogeneously-mixed frozen state and were raised in 0.1 °C steps until transition temperatures were identified by eye. A system monotectic was identified at 5.35 °C consisting of a pure solid benzene phase in equilibrium with two liquid solution phases with compositions wC10mim = 0.011 and 0.29. A system eutectic was identified at −24 °C with a liquid solution phase at wC10mim = 0.78 in equilibrium with pure solid benzene and pure solid C10mim phases. The solid-liquid coexistence data were used to determine the enthalpy of fusion for the C10mim ionic liquid.

Ryan, Zachary

Institution: *VA - James Madison University*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Zachary Ryan,
Oleksandr Kokhan

Abstract Name: **Development of an affordable UV detector for liquid chromatography**

Liquid chromatography systems are relatively expensive for undergraduate education and research. The price ranges are typically in tens of thousands of dollars. To more broadly introduce liquid chromatography methods and principles to education and research we are developing a modular open source chromatography system. In this presentation we describe our results on building and testing a UV detector at 280 nm for protein quantification. We used tinkercad, an online 3D modeling software with a simple and easy to learn interface to design structural pieces of a flow cell, and used 22 mm coverslips to provide UV-light access to the sample. We use an LED with a narrow emission spectrum centered at 280 nm to avoid costs and complications associated with using conventional mercury and deuterium lamps. The light intensity is measured with a UV photodiode and digitized with an Arduino board, and the single wavelength absorption allows us to avoid complex and expensive light focusing lenses or mirrors. The data is transferred to a computer in real time and analyzed with LabVIEW. To improve signal-to-noise ratio and minimize data transfer bandwidth limits we oversample our output, average 500 data points, and transfer the averaged data. A set of performance benchmarks has been completed. We estimate that the cost of our detector is approximately $70 vs.$2,000 for commercially available units. With this project we hope to provide easy to follow instructions for others to build their own UV spectrophotometers and to incorporate them into undergraduate curriculum and research.

Rylander, Jonathan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **English/Linguistics**

Author/Contributors:
Grace Schutte

Abstract Name: **Invisibly Here: The Future of Life Writing in Writing Centers**

In writing studies, Jonathan Alexander has employed the term “life writing” to describe the work of encapsulating the complexities of one’s lived experiences through writing (“Writing a Queer Life” 1). For us, such a theory extends the work of writing center scholars considering ways in which private and public struggles take shape through writing centers (Denny, Mundy, Naydan, Sévère, Sicari). These struggles remain increasingly tied to questions around agency and expression in the context of larger unstable social and cultural contexts. And so, we define “life writing” more broadly to encapsulate the work of helping students find meaning, voice, and agency within larger systems of inequity. Indeed, this roundtable starts by positioning life writing as a bridge between personal and academic. Yet, it builds toward offering life writing as praxis—as a writing center method for connecting with writers in a world torn apart, so often, these days. Questions around how students engage, and grow, are always tied to embodied struggles and histories they share with us, through conversation. These struggles manifest through traditional academic prose. At the same time, life writing recognizes writing centers as spaces that welcome creative fiction and nonfiction writing to process mental health and pain—that take seriously students navigating invisible struggles, including histories of shame and repression. We consider, too, how it enables us to better understand advocating for students navigating social anxieties. Presenters will begin by reviewing life writing as an emerging genre and lens we see taking shape in our writing center. Next, before opening for discussion, presenters offer what it might take—including community partnerships-- to develop life writing a genre, as a critical modality, and as a writing center method. We look forward to hearing ideas from other writing centers practitioners.

Rynders, Alexandra

Institution: *WI - Carthage College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Giana Apostoli *Alexandra Rynders* *Jack DeSalvo*
Cameryn Eickstead *Olivia Wolf* *Daniel Miller*
Sarah Terrill

Abstract Name: **Avoidance Expression of Wistar-Kyoto and Sprague-Dawley Rats Following Overnight Fast**

Interoceptive feedback to the brain about the physiological internal state of the body plays an important role in guiding behavior. A single overnight fast can reduce anxiety-like behavior in rats, as assessed in the elevated plus-maze, open field tests, and acoustic startle and light-enhanced startle responses in rats. This reduction in anxiety appears to be an adaptive response to negative energy balance as it promotes exploratory and food seeking behaviors thus increasing the likelihood of body energy repletion. However, very little is understood about the biological and behavioral mechanisms through which physiological state influences behavior in the Wistar-Kyoto (WKY) rat, a model for stress vulnerability. The WKY rat exhibits behavioral inhibition (BI), a temperament characteristic associated with increased vulnerability to stress when compared to Sprague-Dawley (SD) rats, which serve as non-behaviorally inhibited (NBI) controls. Previous research has demonstrated that WKY rats exhibit superior avoidance performance in a signaled lever press avoidance task in which a tone conditioned stimulus (CS) signals a foot shock unconditioned stimulus (US) relative to NBI controls. The current study tested the hypothesis that an overnight fast affects lever press avoidance responding. We tested this by examining the effect of an overnight fast in female WKY (n = 8) and SD (n = 8) rats on signaled lever press avoidance. While the overnight fast did not impact avoidance behavior in WKY rats, fasting significantly increased avoidance performance in SD rats. However, total lever presses during the avoidance period was significantly increased in both WKY and SD rats following overnight fast. Our results support the view that physiological state plays an important role in influencing behavior and is the first demonstration that a single overnight fast can enhance avoidance responses in non-behaviorally inhibited SD rats to the level of avoidance demonstrated by behaviorally inhibited WKY rats.

Ryu, Justin

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Justin Ryu,
Harshad Panikkaveettil Ashraf,
Jacques Wadiche,
Linda Overstreet-Wadiche

Abstract Name: **Characterization of Npas1+ Interneurons in the Mouse Dentate Gyrus**

The dentate gyrus is a region of the hippocampal formation that is critical in learning, memory, cognition, and spatial recognition. Within the dentate gyrus, GABAergic interneurons, which release the neurotransmitter gamma-Aminobutyric Acid (GABA), are highly heterogeneous with multiple subtypes that have not been well characterized. These interneuron subtypes provide strong synaptic inhibition that enforces sparse neural activity of the principal neurons (granule cells) and dynamically gate the flux of neural information from the cortex. Our lab is specifically interested in neurogliaform (NGFCs) interneurons, a dendritic-projecting subtype with slowspiking properties that express neuronal nitric oxide synthase (nNOS). There are numerous Npas1-expressing interneurons (Npas1+) within this region, but they have yet to be differentiated into existing classes.Here, we used mouse hippocampal slices to characterize the morphological and physiological features of Npas1+ interneurons as well as their molecular marker expression to determine whether they can be differentiated from NGFCs. Our results show that Npas1 neurons co-express nNOS. While the physiological properties of Npas1 cells overlap with nNOS interneurons, the spiking pattern is not consistent with NGF interneurons. Together these results suggest that Npas1 neurons are a subset of nNOS-expressing interneurons that are not neurogliaform cells, but likely correspond to anatomically defined classes of either Total Molecular Layer (TML) or Hilar Commissural-Association Pathway (HICAP) interneurons.

Sabino, Dylaney

Institution: ***FL - Stetson University***

Discipline: Theatre and Dance

Author/Contributors:
Dylaney Sabino

Abstract Name: The Creation of an Accessible Stage Performance

A live theater experience is traditionally considered to be made up of both visual and audio components, however for the blind or partially sighted audience member, sight is not a prominent part of their theater experience. In exploring the connection between the theatrical experience and the presence of inclusive audio environments, the author hopes to foster as inclusive and accessible an experience as possible through the use of audio descriptions and comprehensive sound design. Audio descriptions are the verbal additions made by a trained describer creating a mental picture of sets, costumes, characters and other visual elements of an onstage performance, both preceding and accompanying said performance, resulting in a more engaging experience for those who rely on their hearing.These audio descriptions are delivered to specific audience members via audio transmitters. These transmitters are individual devices meant to receive audio data sent through the sound board operator's system during a performance. These devices can be used both to transmit a separate signal containing audio descriptions for particular audience members, or can be used to simply boost the acoustic signal in the room from cast member dialogue. This secondary option helps to amplify the presence of natural sounds resulting from the show's writing and blocking.This work was inspired by the author's two-year employment with Young Sound Seekers, a Stetson University program partnered with the Conklin Davis Center for the Visually Impaired, geared towards exploring soundscapes in the natural world and inspiring efforts of conservation and active participation in environmental efforts. By implementing YSS's intentions of inclusivity into the world of theater arts, the author hopes to create a space where all audience members can feel comfortable and fully captivated by their theatrical experience.

Safi, Melanie

Institution: ***NY - Brooklyn College***

Discipline: Nursing/Health Science

Author/Contributors:
Melanie Safi

Abstract Name: The impact of social media on the dietary choices of young adults in America

In recent years, social media has developed a strong presence in the everyday lives of young adults in America. Content specifically related to food, diet and nutrition often contain negative, unreliable information and can be harmful for young people who use these sites frequently. Due to the fact that young Americans are a vulnerable population, this is especially a problem to pay attention to. Exposure to this content almost daily can produce a profound impact on people's dietary choices. In my research, I will explore the impact that social media has on the dietary choices of young adults in America. Additionally, through the use of an online survey, I will be investigating young adults' personal motivations and influences for their diets. My primary claim is that social media does indeed play a large role in influencing the food habits of people who are exposed to food, diet and nutrition-related content.Social media is notorious for creating unrealistic beliefs and expectations in regards to body image and weight loss, creating a plethora of issues in relation to disordered eating, or eating habits in general. This content can cause issues with self-esteem and body image, and people may feel compelled to alter their dietary choices in order to achieve a certain image similar to one that they find online. In continuation to this, content related to food, nutrition and diet may generate eating disorders and convince viewers that weight is a significant sign of general health and self-worth.On the other hand, some positive ways in which social media may impact dietary behaviors may also exist. Images and videos of healthy foods and balanced meals that circulate on these sites could potentially inspire people to adopt healthier food choices.

Sajoyan, Kyle

Institution: *VA - Liberty University*

Discipline: History

Author/Contributors:
Kyle Sajoyan

Abstract Name: **Genocidal Counterinsurgency: The German Anti-Partisan War in Belarus**

The author took an interest in the history of the Eastern Frontin World War Two early in his life with a particular focus on Operation Barbarossa. Themyth of the “clean Wehrmacht” among other fallacies regarding the German Army demonstrated the necessity of critically studying the most destructive theater of the Second World War. By scrutinizing both primary and secondary literature, the author decided to add to the existing scholarship around the Eastern War by focusing onthe “counter insurgency” campaign in occupied Belarus. Through the lens of anti-partisan specialists such as Erich von dem Bach-Zelewski, the paper demonstrates the genocidal brutality of the guerilla war in the East and simple calculus the SS and Wehrmachtunderlined in their fight: to destroy the resistance, one must indiscriminately kill every man, women, and child regardless of the threat they pose.

Salas, Justyn

Institution: *IL - North Central College*

Discipline: Biology

Author/Contributors:
Justyn Salas,
Courtney Mayeda,
Gregory Ruthig

Abstract Name: **A New Method for Counting and Identifying Water Molds in Field Samples**

Water molds (Oomycota) are aquatic multi-host pathogens that infect many species of amphibians and aquatic invertebrates. We developed a modified method for the quantification of reproductive propagules (zoospores) responsible for water mold transmission between hosts in aquatic habitats using Microwell Plates (MWP). We added 100 µL of potato dextrose agar to each well of a 96 microwell plate. We then added 100 µL of water from a serial dilution of water mold zoospores with known concentrations based on hemocytometer counts. We found that there was a close relationship between hemocytometer counts and microwell plate counts. When we tested water samples from a local wetland, the MWP method proved to be precise and repeatable when water samples from four field locations were assessed. To confirm that the quantified growths on MWP are the target species of water mold, Saprolegnia Sp. 2, molecular methods of identification such as using specific probes and primers in a quantitative polymerase chain reaction (qPCR), and restriction fragment length polymorphism (RFLP) in a restriction enzyme digest were tested. A DNA extraction method using squishing buffer and proteinase K was successful in reliably extracting water mold DNA for use in qPCR. Moving forward, the specific primers and probes that were created for the target species of water mold for use in the qPCR and the restriction enzymes that were selected for use in a digest will be tested on extracted water mold DNA to identify the growths counted.

Salas, Sydney

Institution: *PA - Susquehanna University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sydney Salas *Christine Wiktor* *Swarna Basu*
Pavithra Vivekanand

Abstract Name: **Investigating the anti-inflammatory effects of Pomegranate Gold Nanoparticles on LPS stimulated THP-1 macrophages**

While inflammation is a crucial response to illness or injury, chronic inflammation has been shown to be a contributing factor to autoimmune diseases like multiple sclerosis, systemic lupus, and rheumatoid arthritis. The therapies currently used to treat these diseases focus on immuno suppression which can put someone at high risk for infection and many other opportunistic illnesses. Emerging therapies are targeting inflammatory cytokines by using plant-based derivatives. Several of these plant-derived molecules like curcumin, colchicine, capsaicin, and quercetin have demonstrated anti-inflammatory properties. The anti-inflammatory properties of pomegranates are correlated to a unique ellagitannin known as punicalagin. It has been hypothesized that Punicalagin is key in preventing the release of IL-6, IL-1b and TNF-a cytokines by inhibiting the NF-kB pathway. The objective of this work is to investigate the anti-inflammatory ability of pomegranate gold nanoparticles (Pom AuNPs) to reduce cytokine production from differentiated THP-1 cells. The use of pomegranate juice to mediate the synthesis with the gold chloride allows for the improvement of pharmacological activity and overall stability of the AuNPs. An XTT cell viability assay indicated that the Pom AuNPs have minimal cytotoxic effects at concentrations up to 100 mg/ml. Differentiated THP-1 cells were pre-treated with increasing concentrations of Pom AuNPs for 1 hour prior to lipopolysaccharide (LPS) exposure. LPS is a component of gram-negative bacteria that induces the secretion of pro-inflammatory cytokines by triggering the activation of the NF-kB signaling pathways. Preliminary results suggests that treatment of cells with Pom AuNPs resulted in a decrease in IL-6 production when compared to LPS only treatment but had no effect on the production of TNF-a.

Sale, Carter

Institution: *FL - Florida Atlantic University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Carter Sale,
Aliza Sloan,
J.A. Scott Kelso

Abstract Name: **Critical Dynamics in the Emergence of Agency**

As adults we understand that our actions can affect the world. Less clear is how we become aware of our causative powers in infancy. This study aims to capture and describe the dynamics of the emergence of agency, action towards an end. The mobile conjugate reinforcement paradigm provides an experimental window into this process. Infants begin the experiment as detached observers, but when one of their feet is tethered to an overhead mobile, infants may discover their ability to move the mobile. A sudden increase in movement rate is proposed to mark a moment of agentive insight (Kelso, 2016; Kelso; Fuchs, 2016). Sloan (2022) collected 3D movement data at 100 Hz from 16 babies (age: M = 100.33 days, SD = 15.57) and calculated cumulative displacement of the tethered foot during infant~mobile interaction. This was differentiated twice across 1-min.-wide intervals with 10ms shifts (using the Matlab function movingslope.m) to produce 1-min. changes in movement rate (acceleration). We will apply linear regression to cumulative displacement in the minute preceding and following the infant's peak acceleration to explore dynamics related to agentive discovery. We predict that the magnitude of fluctuations will be greater before maximum acceleration than after since fluctuation enhancement is a hallmark of complex systems nearing phase transitions (Kelso, et al., 1992). Identifying mechanisms underlying the emergence of agency may help develop an array of novel treatments as aberrations in agency are involved in movement disorders (Kranick, et al., 2013) and mental illness (Szalai, 2016; Jeannerod, 2009).

Salyer, Chloe

Institution: *TN - East Tennessee State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Chloe Salyer *Mary Jo Oliver* *Lauren Ledford*
Meredith Jordan *Adam Walker* *Andrea Clements*

Abstract Name: **The Impact of COVID-19 on Recovery Communities in Appalachia**

COVID-19 led to an evolution in substance use disorder (SUD) treatment where service providers and persons with SUD have faced various barriers in giving and receiving treatment (Mellis et al., 2021; Palacio-Gonzalez et al., 2022; Radfar et al., 2021). Therefore, the purpose of this study is to examine recovery meetings pre- and post-COVID-19. Data was collected through phone interviews and emails that were coded to account for the current state of recovery meetings from 2018-2022. The data was analyzed using a chi-square test of independence and a chi-square goodness of fit test. In our sample of recovery meetings, there was a significant difference between the expected number of meetings before and observed number after COVID-19 X2 (4, N = 350) = 39.303, .001. Furthermore, there is a significant relationship between the number of meetings offered in the noncore, micropolitan, small metro, and medium metros and their meeting status. This indicates that most rural locations are related to lower frequencies of meetings (12, N = 350) = 44.983, .001, Cramer's V = .207. An overwhelming majority of the meetings have an unsure status (N = 118). This indicates the meetings could not confirm or deny their availability of transportation. Meetings that do offer transportation (N = 10) and do not offer transportation (N = 77) lacked sufficient sample size to analyze differences in locations. Thus, we can only tentatively support our final hypothesis. Based on our results, we can posit that recovery meetings and communities have been negatively impacted by the COVID-19 pandemic in Appalachia.

Sam, Akza

Institution: *NY - SUNY New Paltz*

Discipline: **Physics/Astronomy**

Author/Contributors:
Akza Sam

Abstract Name: **Shape Model and Boulder Clustering Analysis of Near-Earth Asteroid 2008 EV5.**

Near-Earth asteroids have Earth-crossing orbits that may presenta significant threat to life. Asteroid radar modeling aims to detect and classify hazardous asteroids to contribute to the efforts of planetary defense. We modeled the near-Earth asteroid 2008 EV5 using delay-Doppler radar images obtained by the Arecibo and Goldstone planetary radars during a close approach in December 2008 when the asteroid was within 0.022 AU. The SHAPE software was used to determine the three dimensional shape of the asteroid, its spin state, and other physical properties. The shape model of 2008 EV5 is a 2000-vertex polyhedra which reveals an equatorial bulge and a concavity on the equator. We estimate 2008 EV5 to have a pole direction of (λ , β) = (150°, -70°) ± 10° in ecliptic coordinates and an equivalent diameter of 445 ± 45 m. EV5's surface appears to be smooth over decameter scales. We performed clustering analysis on a sample of potentially high standing boulders on EV5's surface which correspond to bright pixels near the trailing edge of the radar images. The distribution of angular separations between the facets corresponding to the bright pixels were compared to the normal distribution of all facets on the model using a Kolmogorov-Smirnov test. The boulder clustering analysis reveals that the sample of boulders are clustered and may represent boulders larger than 10 meters on the asteroid's surface.

Samson, Manish

Institution: *TX - The University of Texas at Dallas*

Discipline: Chemistry/Materials Science

Author/Contributors:
Manish Samson,
Durgasha Poudyal,
Shalini Prasad

Abstract Name: **Fabrication of a Portable Pesticide Electrochemical Sensor: A Novel Label-Free Detection Of Glyphosate in Human Urine**

The increasing ambient toxicity levels and exposure to glyphosate, a widely used herbicide and desiccant, are significant public health issues. In this study, we aim to design a highly sensitive, label-free, portable sensor for the direct detection of glyphosate in human urine. The sensor platform consists of a portable, circular circuit platform with gold working and reference electrodes to enable non-faradaic electrochemical impedance spectroscopy. The sensing platform is comprised of an immunoassay-based electrode surface immobilized with a monolayer of dithiobis succinimidyl propionate (DSP), a thiol-based cross-linker, which was then modified with a glyphosate antibody (Glyp-Ab) through the bonding of the ester group of DSP with the amide of the antibody (Glyp-Ab). The sensor was tested electrochemically through two methods - the laboratory-based Gamry benchtop method and the custom portable sensing platform. Using the bench-top method for the glyphosate-spiked urine samples resulted in a dynamic response in the concentration range of 0.1–72 ng/mL with a limit of detection (LOD) of 0.1 ng/mL. This platform showed high selectivity in the presence of major interfering analytes in urine [malathion (Mal), 3-phenoxybenzoic acid (PBA), and chlorpyrifos (Chlp)] as well as high reproducibility with low inter-chip variation. Performance between the benchtop method and the portable platform were compared - creating a Pearson performance correlation of r = 0.994 between the two methods. This illustrates the development of a portable sensing approach that can be a highly reliable alternate sensor platform for the direct detection of pesticides in human bodily fluids.

Sanchez, Javier

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Javier Sanchez

Abstract Name: **Standard Flag Orders for Non-Complex Reflection Groups**

Galois orders were initially derived in 2010 and Futorny and Ovsienko and unify the study of the universal enveloping algebra, generalized Weyl algebras, shifted Yangians, and Coulomb branches. Since then easier methods were discovered for studying them, namely principal flag orders, which are essentially equivalent to studying principal Galois orders defined by Hartwig. They consist of an integrally closed domain Λ, $W \leq \mathrm{Aut}(\Lambda)$, and M a sub-monoid of $\mathrm{Aut}(\Lambda)$. To date, research on flag orders has been focused on those where W is a complex reflection group. We use techniques developed by Jauch in 2021 to examine standard flag orders with non-complex reflection groups such as the alternating group An and the quaternion group Q8. Additionally, we will construct maps from these flag orders to flag orders with the appropriate symmetric group as the group data. This takes the study of flag orders in a new direction and constructs algebras related to Hecke algebras with groups not normally associated with them.

Sanchez, Juan Pablo Cubillos

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Mounkoka Francesca Flora Goma,
Juan Pablo Cubillos Sanchez

Abstract Name: **Hydraulic efficiency of 3d printed static mixers**

Drainage practices are commonly used in Midwestern states to increase crop yield. While this method is very feasible for crop production optimization, it has some unwanted environmental effects. Unfortunately, water that is artificially drained from agricultural sites carries large amounts of nutrients to receiving waters and creates a pollution problem. There are several experimental engineering practices that suggested decreasing nutrient concentration. One of them ison-site treatment filtration of drainage water. Fast and efficientmixing of drainage water with treatment material ist he key to this practice.This goal may be achieved viastatic mixers.Static mixers are used in continuous practices, where they homogenize fluids with no moving parts, making them key components for filtration processes.There are different types, but we will focus on them here in the inline mixer.As they have for purpose to create turbulence that enhances the rapidmixing of the injected chemical into the water stream. We use them specifically for chemical treatment due to the fact they create an injection point for chemicals into water line.This research is devoted to determining the efficiencies of static mixers with different geometries.The goal is to improve filter efficiency by finding the adequate format of inline static mixerfor the right task. Hence, every filtration process differs and needsa different static mixer. Forthis, we are focusing on analyzing, characterizing, and designing a 3D line static mixer. In order to accomplish that we will be using a 3D printer to create models based on the design that we produced and test them based on specific criteria which are based on homogeneity and sediment retainment after mixing.

Sanchez Gutierrez, Lizzeth

Institution: *TX - Tarrant County College*

Discipline: **Nursing/Health Science**

Author/Contributors:
Mayra Camarena *Adrian Ramirez* *Lizzeth Sanchez Gutierrez*
Ashlee Webster

Abstract Name: **Location of cartoid body oxygen sensors in the Alligator mississipiensis**

This research sought to identify the location of the carotid bodies in the Alligator missisippiensis. Biologists are interested in alligators due to their evolutionary success and distinct physiology. Their unique cardiopulmonary system has been researched, yet to date little has been published about the exact location of alligator carotid bodies. In humans, carotid bodies detect changes in blood levels of CO2, O2, and H+ and help maintain blood-gas homeostasis. Carotid body dysfunction can cause congenital central hypoventilation syndrome (or Ondine's Curse) and other forms of sleep apnea. Alligators are useful as a study model for understanding the evolution of blood-gas regulation in terrestrial vertebrates since they have changed little in the last eight million years. Further research on their vasculature and carotid bodies may help researchers understand how to treat certain human carotid body related diseases. Prior studies have determined that the carotid bodies in mammals are typically located at the bifurcation of the internal and external carotid arteries found laterally in the neck. The authors hypothesized that alligator carotid bodies would also be located at the bifurcation of the internal and external carotid arteries, although in alligators, this bifurcation is located on the posterior surface of the skull. Methods used in this study included vascular dissection of seven juvenile, female alligators, vascular casting, and Kluver-Barrera histological tissue staining for identifying myelin. The researchers' results showed that myelin was located at the bifurcations of the external and internal carotid arteries, indicating the likely presence of nerve fibers from the glossopharyngeal nerve and carotid body. Interestingly, as suggested by prior CT scans of alligator vasculature, the researchers also confirmed via direct dissection that the branching patterns of the left and the right carotid arteries were asymmetrical in the alligators studied.

Sanden, McKenzie

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Mckenzie Sanden,
Mackenzie Thackery,
Makayla Dove,
Qian Wang

Abstract Name: **Genetic Contributions of APOE & TOMM40 to Mitochondrial Morphology & Alzheimer's Disease**

The strongest genetic risk factor of late on-set Alzheimer's disease, LOAD, is the apolipoprotein allele APOE ε4. APOE is an apolipoprotein that transports cholesterol and amyloid-beta proteins between cells and across the blood-brain barrier. Previous research suggested APOE ε4's relation to LOAD is tied to inefficient cholesterol; lipid transportation. Thus causing amyloid-beta protein accumulation and plaque formation in the brain. New research suggests that APOE ε4 affects other cellular functions, such as cellular glucose metabolism. TOMM40 rs2075650, a translocase of the outer mitochondrial membrane, is another single nucleotide polymorphism tied to Alzheimer's disease. Interestingly, genes APOE and TOMM40 are in proximity on chromosome 19 and share linkage disequilibrium. In order to study their effects on cellular level, HEK293 cell lines carrying combinations of these alleles will be created using Piggy-bac homology-directed repair method facilitated by CRISPR Cas9 technique. The Piggy-bac plasmid vector contains GFP, Puromycin resistance and hsvTK genes for cell selection. Once the cells are verified through sequencing, we will evaluate the effect of APOE ε4 on the distribution and transportation of cholesterol inside and outside HEK293 cells, glucose metabolism through mitochondria, and also to study its interaction with TOMM40 rs2075650.

Sanders, Aubrey

Institution: *AL - Auburn University*

Discipline: Environmental Studies

Author/Contributors:
Aubrey Sanders

Abstract Name: **Urban Economics and Environmental Design in Montgomery's Peacock Tract**

“When God gives the vision, provision follows.” - C.P. Everett, IV Mt. Zion A.M.E. Zion Church is a protected landmark found in the historically African American neighborhood of Peacock Tract, Montgomery, Alabama. Mt. Zion A.M.E. Zion Church’s restoration is part of ongoing efforts to revitalize the surrounding neighborhood. Charles P. Everett is the Director of Restoration for Mt. Zion A.M.E. Zion Church. In 2021, Auburn University College of Architecture, Design and Construction’s Environmental Design program approached Everett, to research and propose design-based solutions to economic and environmental disparities in the Peacock Tract. Parallel research on urban development in the Peacock Tract has been conducted by Auburn University, Columbia University, University of Pennsylvania, Tuskegee University, City of Montgomery, and local advocacy groups since at least 2012. The available research on the revitalization of the Peacock Tract has several limitations. These limitations include: - outdated statistical data (2010), - subjective and incoherent language, - low resolution data analysis, - lack of environmental documentation, - lack of social infrastructure analysis, and - lack of economic resiliency analysis.Urban Economics and Environmental Design in Montgomery’s Peacock Tract aims to address the limitations of current available research. To address the current research limitations, the project aims to: - update statistical data, - create a non-subjective model and coherentlanguage structure - increase data analysis resolution - document environmental conditions - document social infrastructure, and - conduct economic resiliency analysis. The guiding thematic questions are as follows:- How do transportation economics and environmental conditions in the peacock tract influence welfareoutcomes for its residents and workers? - How resilient is the transportation system of the Peacock Tract, and how might this impact welfareoutcomes for its residents and workers?In answering these questions, the preconceived notions of transportation planners around the world is carefully challenged.

Sanders, Emma

Institution: *AZ - Embry-Riddle Aeronautical University*

Discipline: Education

Author/Contributors:
Emma Sanders,
Rachel Reinsch

Abstract Name: **Engineering and Project Manager Collaboration Expands Virtual Learning**

Lunar Languages is a free application developed by Embry-Riddle Aeronautical University upper-level software engineering students to provide an interactive and fun way to learn spoken languages and computer science components, including Python coding and vocabulary terms, Russian language vocabulary, and limited Mandarin vocabulary terms. Lunar Languages promotes educational growth via a hand-held,interactive gaming interface specifically designed to promote multi-purpose learning with endless applications.The Embry-Riddle Aeronautical University, Prescott College of Engineering (COE), in conjunction with the College of Business, Security; Intelligence (CBSI) are coordinating further updates of the Lunar Languagesapplication. Students from the COE specializing in software engineering and Games; Simulation partnered with project managers from the CBSI who earned the Certified Associates in Project Management (CAPM) to expand vocabulary, and develop graphics and support systems of the Lunar Languages application.This application provides students of all majors with free access to a digital database of vocabulary terms via gamification interface, promoting memorization and practical language-learning via interactive participation in augmented reality, accessible on the Apple App Store and Google Play. Recently, software developers expanded the functions of the application by adding Russian language vocabulary, randomizing the questions presented to the user, adding pinch and zoom functions, implementing sounds for correct answers, and creating a high-level class diagram for the developers to understand the processes of the app. Further application development includes collaboration with the College of Engineering to expand code for Mandarin vocabulary, expand map support to increase accessibility and range of the application, and update the sims and graphics designs for the app. Collaboration between project managers and the College of Engineering allows students to create a realistic plan to expand the digital infrastructure of this app and design diverse educational resources for individuals studying linguistics and computer science at all levels.

Sanders, Shelby

Institution: *TX - Tarleton State University*

Discipline: Social Work

Author/Contributors:
Shelby Sanders,
Haylee McMurry,
Madison Hill

Abstract Name: **Limited Access to Rural Community Schools**

Sensitive topic agencies have limited access into the education system and are unable to inform school aged children on sensitive topics. Due to the limited ability agencies who facilitate sensitive topic programs contain in the rural community school systems, student researchers introduced a question pertaining to the issue. How do educators in rural communities perceive agencies who facilitate sensitive topic programs? This study aims to understand factors related to sensitive topic agencies. Through a survey, the student researchers collected mixed-methodological data with a concentration on quantitative data. The overall targeted sample size was 75 educators who have worked in rural community school systems. After speaking with individuals, researchers can reach out to schools as a whole. They can practice at a mezzo level by contacting the school about what individuals inside their facility believe is appropriate to be taught to the students. Reaching out to the school can allow researchers to obtain an approved number of topics that are allowed to be presented to the age group indicated. This will then allow agencies to provide some information regarding sensitive topics to schools. In terms of the macro level, agencies often branch out into counties. The student researchers found that a majority of female participants did report a positive perception of sensitive topic agencies, and male participants reported limited knowledge. They also found that age did not matter when looking at the perceptions the educators have on sensitive topic agencies.

Sanfelippo, Aidan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: History

Author/Contributors:
Aidan Sanfelippo

Abstract Name: **The Orphic Journey: A Study of Mystery Cults Through Orphism**

One question mark within our knowledge of Ancient Greek religion is mystery cults, which carefully guarded their myths and rituals known only to initiates. One thing we know about a few of these cults is their application of Orphic literature. Modern scholarship defines Orphic literature as a collection of hymns, myths, and other narratives said to be written by the poet Orpheus that deal with themes of death and rebirth. Two texts bookend this research chronologically, The Orphic Gold Tablets, thought to have been written circa 400 BCE, and The Orphic Hymns, which were likely written in the second half of the third century (250 - 300 CE). Within this 700-year range, there is an opportunity to examine how mystery cults' beliefs changed by tracking variations in the composition of the Orphic corpus. To measure this, we have examined the death and rebirth myth of Dionysus, an underlying myth told in multiple Orphic texts because of Dionysus' role in the creation of mortals and as the successor to Zeus. For example, in The Orphic Gold Tablets Dionysus became a progenitor of humanity: after he is born, he is devoured by the Titans, they are then destroyed (by Zeus' lightning), and from the ashes, the first humans are created. This myth is also referenced by The Orphic Hymns where Dionysus is given the title "thrice-born" when he is reborn twice after his death referenced in The Orphic Gold Tablets. This project will acknowledge the connections to this myth in each Orphic primary source, identify how each source differs, and explore the reasons for these differences over time. Through variations in aspects of this myth throughout the corpus of Orphic literature, we assess how the perceptions of mystery cults had changed, which will give us new insights into a previously mysterious group.

Sanford, Tyler

Institution: *FL - Florida International University*

Discipline: Biology

Author/Contributors:
Tyler Sanford,
Philip Stoddard

Abstract Name: **Apparent activity in Aedes aegypti mosquito and its correlation with age and social environment**

Much work has explored the daily activity patterns of the yellow-fever vector mosquito, Aedes aegypti, yet both descriptive and experimental research has lacked cross-study uniformity in the most basic demographic variables. Such inconsistency in methods often produces differences in data and their interpretation. The underlying problem is that we don't know which of the many demographic variables are important determinants of activity behavior. We seek to correct this deficit in basic knowledge by quantifying the activity behavior of individual Ae. aegypti using "latent activity monitors" (LAMs) while systematically varying the most basic demographic variables: age, sex, and social environment. Our first experiment measures 24-hour activity patterns of individuals of separate sexes as they age. The second experiment compares 24-hour activity patterns within single-sex and mixed-sex environmental chambers. With the conclusion of these trials, a better understanding can be garnered of the possible effects of age, sex, and social environment on daily activity patterns. This work will guide future studies on the genetics that underly the activity patterns of Ae. aegypti. The findings will be relevant to public health issues resulting from temporal differences in human exposure to disease vector mosquitoes. Genetically modified mosquito technology might be improved by using this knowledge to better design experiments exploring the effect of genes that underlie activity.

Santiago, Christopher

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Paalman *Sam Frauenfeld* *Christopher Santiago,*
Natalie Ford *Lee Watson* *Ian Leiker*

Abstract Name: The effects of restoration projects on phosphorus concentrations throughout Manitowoc County streams and Lake Michigan

Phosphorus poses an ongoing challenge to Lake Michigan. Excess levels cause algae blooms resulting in degraded water quality in near-shore waters. As local tributaries serve as important phosphorus sources to Lake Michigan, we analyzed phosphorus levels in two streams in Manitowoc County, WI—Centerville Creek and the Little Manitowoc River.These streams have historically exceeded Wisconsin DNR surface water phosphorus standards of 0.075 mg/l phosphorus. Each stream has undergone restoration near where they enter Lake Michigan in order to slow stream flow and reduce phosphorus loading into Lake Michigan. Each creek showed a different trend in phosphorus concentration along its length. Centerville Creek showed lower phosphorus concentrations within the restoration area compared to the upstream branches, although all significantly exceeded the WDNR threshold. North branch averaged 0.510 mg/L phosphorus, and the south branch averaged 0.430 mg/L.Sites within the restoration project averaged 0.307 mg/L. In contrast, no difference in phosphorus concentration was noted between the upstream and restoration sites in the Little Manitowoc River.This may be because this restoration was more recently completed (2020 vs 2012), or due to the surrounding land use as the Little Manitowoc River runs through the city of Manitowoc, while Centerville Creek goes through agricultural land. However, overall concentrations across the Little Manitowoc River were lower than any of the Centerville sites, with an average concentration of 0.071 mg/L, below the WDNR threshold, and rain events did not increase phosphorus as much as in Centerville Creek. Future work will focus on identifying future sources as well as continued monitoring to evaluate the success of these restorations and inform land use decision-making.

Santiago, Lendin Stell

Institution: ***CA - California State University - Channel Islands***

Discipline: Psychology/Neuroscience

Author/Contributors:
Lendin Stell Santiago,
Chris Korpontinos,
Gareth Harris

Abstract Name: Characterizing novel mechanisms underlying serotonin dependent influences on behavior

Mood disorders, such as depression, affect over 40 million people in the US. Despite the use of an array of therapeutics for mood disorders, current understanding of the mechanisms underlying these processes and the specific targets of each therapeutic remains unclear. This results in variable success of the existing treatments, along with very little specificity toward an individual. More recently, there has been a deeper focus on understanding serotonin targets involved in mood and mood disorders. We use the nematode, Caenorhabditis elegans, to investigate the behavioral effects of serotonin and the neural mechanisms and intracellular pathways that mediate serotonin's effect on the brain. Our present study specifically investigates, 1) the novel targets of serotonin, and 2) how serotonin-dependent behaviors may vary across different species within the Caenorhabditis genus. We have found that known serotonin effects on worm behaviors including paralysis and stimulated egg laying, were significantly different across worm species that originate from distinct geographical locations. This implies the possibility of characterizing intracellular pathways and the factors that contribute to the differing behaviors, to understand the extent of pharmacological drug specificity toward an individual suffering from mood disorders. In further research, we intend to discover the targets of serotonin in nematodes across different genera to assess the fundamental variation in the alternate behavioral responses to both serotonin and serotonin targeting therapeutics, which continues to be of high importance in understanding human neuropsychiatric disease, like depression, addiction, and bipolar disorder.

Santillan, Maliya

Institution: ***IA - Iowa State University***

Discipline: **Nursing/Health Science**

Author/Contributors:
Maliya Santillan

Abstract Name: **Shadowing Rock Island's Coroner**

Over the summer of 2022, I shadowed Rock Island's Coroner-Brian Gustafson,where I saw autopsies being performed.I spent a total of 22 hours transporting and shadowing autopsies. Atotal of fivewere shot, with two overdoses and one natural death. While shadowing, I would typically observe and occasionally help handout tools. During my time shadowing, I got to see how complex autopsies truly are. They are very precise and done with much respect. The main objective of an autopsy, especially in forensics, is to find the cause of death, and they are performed by step-by-step examination of a deceased patient's external and internal organs. The forensic pathologist would allow the Rock Island Police Department to collect their physical evidence and thendo the autopsy where the primary organs:heart, lungs, liver, kidneys, and brain, would be weighed and cut into smaller pieces for further examination. Once the forensic pathologist examined all external and internal organs, Brian and I would transport the body to a local funeral home. The funeral home is where the mortician or funeral director would take the bodies out ofthe car and begin the funeral preparations.The most important takeaways from this shadowing opporrtunity would be to see and experience the utter respect these people have for the deceased and the deceased's family, the difficulty and complexity an autopsy consists of, and lastly, I received important information and knowledge from Brian and the other forensic pathologists I shadowed in the summer, and I'm forever thankful for this amazing opportunity.

Santillan, Margarita

Institution: ***IL - Northeastern Illinois University***

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Margarita Santillan

Abstract Name: **Starving for Stability: Examining the Effects of Eating Disorders on Cognition**

People's food choices and perceptions of healthy food are affected by dominant cultural views on the subject and access to food. The present study focuses on the potential relationship between decision making, eating behaviors and impulsivity. It is hypothesized that decisions of individuals of color will be affected by their peers' or families' perceptions of their food behaviors, choices and definitions of "healthy eating". Given the heavy reliance on the Iowa Gambling Task in this type of research, an original survey was created for the purpose of this study. Participants registered for this experiment via the NEIU SONA system. After receiving the study link, individuals were provided with information necessary to decide whether to continue with the survey. Those that agreed were asked to complete a series of surveys, including the original scale and the Barratt Impulsiveness Scale (BIS-11). Participants were then asked to provide demographic information, debriefed, and allowed to exit the study. Analysis of the data will provide a better understanding of an individual's relationship with food and how they make decisions that impact this relationship. This study will shed light on the role factors external to the individual play their eating habits. Ultimately this and future research can lead to a better understanding of the factors surrounding how and why individuals suffer from eating disorders. Moreover, such research can improve our understanding of how these illnesses are connected to cognitive functioning.

Santos, Edwin

Institution: *DC - American University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Edwin Santos

Abstract Name: **The Relationship Between Salvadoran Immigrants' Perception of Corruption and their Civic Engagement**

Researching Salvadoran immigrants in the U.S. is important because of how the civil war in their country of origin pushed many of them out. This project analyzes the civic engagement of Salvadoran immigrants in the U.S. in terms of how the history of their country of origin has affected their trust in the government. Research shows a causal relationship between the perception of corruption and trust. A study found that 93% of people in El Salvador thought corruption in government was a significant issue. In light of the causal relationship established between the perception of corruption and trust, it can be assumed that most Salvadorans have low trust in their government. Furthermore, research shows how these perceptions and beliefs about the government are transferred over to the U.S. among individuals after emigration. It can be inferred that Salvadoran immigrants' lack of trust was brought over to the United States when they immigrated. This would then affect their civic engagement because it has been shown that those with lower trust in their government are less likely to participate in political activities. In addition, research has shown that those who immigrate to the United States from countries with "histories of state-sponsored oppression and lack of trust in government institutions" will be less likely to participate politically. That means Salvadorans' experiences with and perceptions of the government are likely to affect their engagement in the United States. I hypothesize that in comparing United States immigrants from El Salvador, those who perceive less corruption in the government in El Salvador will be more likely to engage civically in the United States than those who perceive more corruption in the Salvadoran government.This research is crucial, considering the growth of the immigrant and Latinx communities in the United States.

Santos, Isabel

Institution: *TX - San Jacinto College*

Discipline: Education

Author/Contributors:
Elizabeth Arriaga,
Marissa Marshall,
Isabel Santos

Abstract Name: **Gun Violence in Schools**

Gun violence has become a huge problem, especially when it comes to our schools. Just this year, as of October 31, 2022, there have been forty school shootings, twenty-eight of the victims were students and the other six were staff members. According to SIERP (Stanford Institute for economic policy Research) more than a hundred thousand students between 2018-2019 were involved in school shootings. School shootings have a major effect on students' mental health, academic performance, and enrollment ((Dodson, 2021,). School should be a place where children want to go to learn, make new friends, and a place where they can feel safe and secure. Sensible Gun laws need to be implemented in addition to school based interventions that address problems before shootings occur. One solution that has been tossed around and will not help this situation is arming teachers with guns. This literature review looks at the effects and impact of gun violence on students and offers some research-based approaches for creating safer schools and communities (McMillan, Jordan; Bernstein, 2022),

Saperston, Callie

Institution: ***WI - Carthage College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Callie Saperston,
Dennis Munk

Abstract Name: Effects of Self-Monitoring and Visual Feedback on Mathematical Frustration with a Neurodiverse Learner

Mathematics is a content area that many neurotypical students struggle with, especially at the elementary level when learning the fundamentals of the subject. Neurodiverse learners may be predisposed to mathematical frustration, and past research has focused primarily on interventions involving motivation, self-monitoring, and visual feedback. A literature review was done to look at academic performance, curriculum issues, attributional style, mental health theories, school-based well-being, and frustration in mathematics. This study discusses an intervention involving self-monitoring with a creative visual feedback tool to increase motivation and decrease mathematical frustration in a neurodiverse 10-year-old male student, with diagnoses of autism spectrum disorder, attention-deficit hyperactivity disorder- combined type, disruptive mood dysregulation disorder, and sensory processing disorder. Over the course of 10 intervention sessions in class and in one-on-one work, the learner's frequency of frustration behaviors decreased significantly and his ability to ask for help when needed increased notably. Research across other grade levels along with more of a focus on mathematical performance in learners with specific diagnoses using creative visual feedback is needed to see if what the student colors matters or if online versus hand drawn coloring matters.

Sarabu, Jatin

Institution: ***CA - San Jose State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Vignan Keshavagari,
Ruthvik Singireddy,
Farwa Kazmi

Abstract Name: AI Modelling for the Impact and Contribution of Various Factors on Heart Attack Casualties

Previous studies reveal that many prevailing health indicators/variables can play a significantrole in heart attack-based causalities. These variables include blood pressure, age, anemia,smoking, serum sodium, ejection fraction, serum creatinine, platelets, diabetes, and creatininephosphokinase. With the increasing computational power, it is now possible to use differentalgorithms to develop a predictive model that will take the input data related to various factorsto predict the outcome in term of survival or death of the patients. Developing these models istime consuming task that may take a lot of effort and resources. This can be eased by using machine learning tools that be able to develop a predictive model by incorporating multiplealgorithms for an optimized solution predicting the final outcome with a high accuracy. In the current work, an open-source data from Kaggle was obtained that incorporated multiple variables for 300 patients including the final outcome for these patients [https://www.kaggle.com/datasets/heart-failure-clinical-data]. We used IBM Watson platform to conduct this study. IBM machine model first analyzed each variable by conducting astatistical analysis on each variable. Then it used random Forest Classifier and LGBMClassifier with and without multiple enhancements including HPO-1/HPO-2/FE. Thedeveloped model can predict the outcome with an accuracy of 86.6%. Important variables contributing to the outcome predicted by LGBM forest included platelets-76%, EjectionFraction-58%, Creatine Phosphokinase-52%, Serum Creatine-49%, Serum Sodium-34%, andAge-27%. On the other hand, the corresponding variables contribution predicted by theRandom Forest included serum creatinine-50%, ejection fraction-30%, creatininephosphokinase-25%, age-19.00%, and platelets-18%.This presentation will highlight the medical implications for selected variables contributions and will provide information

Sarah, Mercedes

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Mercedes Sarah

Abstract Name: **Covert Resistance to #MeToo: The Uptake of Social Change and Public Anxiety in the Menøs Lifestyle Magazine Cover Genre**

The #MeToo social movement begun in 2017 raised voices and awareness around sexual violence and its role in masculinity, impacting individuals and institutions across the United States (PettyJohn, 2019). The extent to which #MeToo impacted the larger American culture and its masculine ideologies, however, is difficult to gauge. Employing an ideologically rich genre—the covers of men's lifestyle magazines—and concepts from Rhetorical Genre Studies (RGS), this presentation explores the larger impact of #MeToo on American culture. Reflecting the ideologies of the culture it exists within, the genre of men's lifestyle magazine covers plays a powerful role in the (re)production of masculine ideologies to be internalized by its audience. Focusing on the depictions of masculinity and looking for shifts, this presentation draws on analysis and comparison of two sample sets of the genre from before and after #MeToo (12 covers from 2007-2012 and 12 covers from 2017–2022) fromGQ, Esquire, Men's Health, Men's Journal, Playboy,andMaxim. Two shifts are identified in ideological (re)production of masculinity: (1) the replacement of traditional, clean-cut masculine aesthetics with a hyper-masculine "caveman" aesthetic; and (2) a dramatic decrease in representations of women as relational objects. The speaker will argue that these patterns represent a sidestepping of the issues raised by #MeToo and a covert resistance to the movement rather than a fundamental shift in American masculinity. While this presentation underscores the extent to which #MeToo may have provoked shifts in how masculinity is (re)produced in this magazine cover genre, it also more broadly considers the extent to which social movements and the resulting public anxiety can impact ideological (re)production in genres. Further, identifying these shifts in masculinity's (re)production through genre analysis allows scholars, activist communities, and individuals to witness the tangible impact of #MeToo on the ideologies that the movement sought to confront.

Sargent, Caroline

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Biology

Author/Contributors:
Caroline Sargent,
Sumei Liu,
Lauren Broman,
Daniel Yao

Abstract Name: **Role of CRF1 and CRF2 Receptors in Stress-induced Increase of Intestinal Permeability**

Stress has been proven to increase the permeability of the intestinal epithelial layer, contributing to the development of irritable bowel syndrome (IBS) and other intestinal diseases. Corticotropin releasing factor (CRF) has been known to mediate stress-induced increase of intestinal permeability and contribute to the etiology and symptom severity of IBS. Actions of CRF are mediated by two G-protein coupled receptors, CRF1 and CRF2, both are expressed in the intestine. However, the roles of the CRF1 and CRF2 receptors in stress-induced increase of intestinal epithelial permeability remain unknown. Since IBS is more common in females than in males, female mice were used in this study. Mice were restrained for one hour/day for five days. The selective CRF1 and CRF2 receptor antagonists were injected intraperitoneally 15 min prior to the restraint stress. Control mice were kept in their home cages without restraint. After the last restraint stress/control session, the proximal colon was removed and intestinal permeability was measured using the Ussing Chamber System. FITC-inulin (4kD) and horseradish peroxidase (HRP, 40kD) were used as tracers to measure paracellular and transcellular permeability, respectively, across the colonic epithelium. The results showed that restraint stress increased both paracellular and transcellular permeability in the proximal colon. Both the CRF1 and CRF2 receptor antagonists significantly reduced the effects of restraint stress on intestinal permeability, suggesting that both CRF receptor subtypes are involved in stress-induced increase of intestinal permeability. Targeting on both CRF1 and CRF2 receptors in the intestine may help to alleviate stress-induced increase of intestinal permeability and symptoms of IBS.

Sarpong, Vetona

Institution: *IL - University of St. Francis*

Discipline: Public Health

Author/Contributors:
Brianna Quintero,
Vetona Sarpong

Abstract Name: **Comparison of Epidermis Characteristics and Microbiome as a Result of Different Mask Type Usage in Young Adults**

The Covid-19 pandemic has highlighted the importance of foundational disease control measures, including personal protective equipment; however, prolonged daily use of respiratory protective equipment can cause a shift in the skin's physiological properties. These changes are likely the root cause of “maskne,” mask-related acne, but not much is known about why these issues occur, and even less about the varying effects between mask types. This longitudinal study compares the effects of surgical masks and cotton masks on pH, temperature, moisture, oil, and microbiome of the facial skin in three areas (cheek, nose, and forehead). The epithelial characteristics of 12 individuals, 18-25 years of age, were analyzed before and after a duration of two weeks of wearing a mask for a minimum of four hours a day. A general trend of increases intemperature, moisture, and oil was found after the use of both surgical and cloth masks. Statistical analyses revealed statistically significant (paired t-test 0.05) increases in cheek temperature (+4.6% and +3.5%)in individuals that wore a surgical or a cloth maskrespectively. Moisture increased significantly at the cheek (+20.6%), nose (+15.8%), and forehead (+21.9%) with surgical mask use and only the cheek (+16.7%) with cloth mask use. The oil content increased significantly, as well, at the cheek (+21.6%), nose (+15.8%), and forehead (+21.6%) with surgical mask use and only the cheek (+17.3%) with cloth mask use. Neither pH nor microbiome quantity or diversity was shown to significantly change with regardto mask use. These patterns canexplain the physiology behind the increase in acne during the pandemic as well as provide insight intowhat can be done to prevent and treat these effects.

Satter, Levi

Institution: *NY - Brooklyn College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Levi Satter

Abstract Name: **FRAMING A KILLER: HOW FICTIONALIZED VS DOCUMENTARY ACCOUNTS OF A FAMOUS SERIAL KILLERS SHAPE ONLINE CONVERSATION**

Stories allow people to engage with immoral minds. Yet, to be associated with an immoral actor is psychologically “threatening” because of the fear of being seen as immoral oneself. In everyday experience people distance themselves from immoral actors to remain unassociated with them; however, fictional narratives create enough psychological distance to allow people to identify with, and explore, the motivations of immoral actors. It is unclear whether this psychological distance occurs with stories about real-world individuals who commit extreme moral transgressions (i.e., serial killers), or whether it affects the characteristics of surrounding discourse. The current study examines whether people engage with “true crime” documentaries versus narrative retellings of the same stories differently. This will be done by scraping online platforms for comments about shows which examine the lives of serial killers (e.g., Jeffery Dahmer). The data will be analyzed using Natural Language Processing for moral content using the Moral Foundations Dictionary 2. Sentiment analysis will also be used to assess the emotional valence of the comments. It is expected that comments related to narrative retellings will have higher levels of moral content and fuller engagement throughout the valence spectrum. Despite having a large online viewership, the documentaries are expected to garner less engagement and exhibit specifically negative valence rather than positive. This is in line with the view that they do not create as much psychological distance between the viewer and the immoral actor. Nonfiction accounts of real-world atrocities may force people to grapple with the moral implications more directly and thus distance themselves from the main subject, whereas fictionalization may lead to more open engagement in online discourse.

Satyadeep, Pranav

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alberto Navarro,
Pranav Satyadeep,
Sohail Zaidi,
Vimal Viswanathan

Abstract Name: **Modeling a Bifacial Solar Panel for Characterization and Performance Evaluation**

Bifacial solar panels are gaining attention due to their superior performance that comes from their ability to generate additional output power (5-10%) by absorbing the solar irradiance from the back surface. Bifacial PV modules still need to be characterized for their overall performance. To evaluate the performance of the bifacial PV modules, attempts are underway at San Jose State University to develop a solar model along with a thermal analysis model that will be then validated by our experimental data. In the current presentation, a thermal analysis model developed for a bifacial PV model is included. For this purpose, a JJN Solar Panel 200 W bifacial PV panel was selected. Basic measurements include the short circuit current and open circuit voltages at various operating conditions. The thermal analysis model includes the basic structure of the panel by considering various layers of the PV module e.g., front surface with antireflection (AR) coating, followed by an emitter layer (P+ Si) and N type wafer that is followed by aluminum back surface layer with AR coating. Thermal conductivities and respective thicknesses of all layers were used to complete the thermal resistance model that was then used to find panel's surface temperatures by keeping a constant flux condition on both the front and back surfaces. Depending on the incident flux, surface temperatures were found varying from 50 to 60 C at the front side as compared to 35 – 30 degrees on the back side of the PV model. For he electrical modeling, five parameters equivalent circuit model proposed by MA et. al. [2019] was employed. Skockley diode equation was modified for the PV panel and IV characteristics were plotted by obtaining the data from the experiment. Final poster will include the details on our experiments and the associated results.

Sauble, Briar

Institution: *PA - Millersville University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Briar Sauble

Abstract Name: **Combining Unsupervised and Supervised Learning for Credit Card Fraud Detection**

Due to potential risks as a consequence of the rapid growth of e-commerce, finding a proper method to detect credit card fraud becomes more important than ever. Supervised learning methods can find patterns within sets of credit card transaction data but can miss novel patterns of fraud and consumer patterns that have yet to be trained upon. Unsupervised learning, in contrast, can be used to find anomalies instead of specific patterns, but is limited due to variability caused by how different components are weighed. Solely using one form of learning for credit card fraud has limitations, which may be possible to correct with a combined approach. In this paper, we develop a way to combine unsupervised learning with weights discovered by prior supervised learning to improve credit card fraud detection. We use a decision tree to find the importance of different components of a credit card transaction in relation to fraud. This importance is then used to determine weights for distance used with the k-means clustering algorithm. To test our weighted k-means clustering algorithm, a dataset consisting of synthetic credit card transactions with over five hundred thousand transactions is used. Our algorithm improves clustering accuracy to 95.3%, compared to the normal k-means clustering accuracy of 90.5%.Due to audit requirements, the banking industry wants its models to be clearly interpreted. So, we present a k-means-based soft clustering algorithmto better apply to the banking industry. A method to find an optimal threshold for models using this simplified algorithm is also developed.

Saucedo, Joel

Institution: *GA - Georgia College and State University*

Discipline: Physics/Astronomy

Author/Contributors:
Joel Saucedo

Abstract Name: **Simulation of Thin Film Growth during Magnetron Sputtering**

Sputtering is a fabrication technique for semiconductors. Thin film growth during plasma vapor deposition is a stochastic process which can be modeled by probabilities and randomly generated energies. The goal of this project is to use Monte Carlo methods to simulate the growth of thin films during magnetron sputtering. The Monte Carlo methods are a broad class of computational algorithms that rely on repeated random sampling to obtain numerical results. Python programming language was used to simulate the motion of constituent atoms to form a thin film during magnetron sputtering by applying the Monte Carlo methods. A random integer was generated representing the energy that each incoming atom has. The binding of the desired atom to the substrate to form a thin film was decided by the amount of energy each incoming atom has. Using python, the time taken to form a thin film of a desired thickness, was estimated. The formation of island growth in thin films was observed during the simulations. It was also observed that increasing the energy barrier and the size of the substrate resulted in longer run times needed to complete a matrix.Keywords: Monte Carlo Simulation, Python, Sputtering, Thin Film

Sautie, Thalia

Institution: *FL - Miami Dade College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Thalia Sautie,
Rosemary Ubeda

Abstract Name: **Zwitterionic Bergman-Triggered Cascade Polymerization: An Usual Multistep Plateau Cascade Leading to Transition Metal-Graphene Nanoribbon (TM-GNR) Hybrid Semiconductors Using Boron-Metal Couple**

With a accelerated growth in artificial intelligence (AI), designing high-speed and low power semiconducting material is ofutmost importance. The present study provides a theoretical basis to access noveltransition metal-graphene nanoribbon (TM-GNR) hybrid semiconductors whose DFT-computed band gaps were much narrower than the commonly used pentacene. A systematic investigation into the bandgaps and the methods to access these novel materials will be discussed. Additionally, the role of unusual hydrogen bonds and plateau reactions in successful cascade polymerization will be discussed.

Sautman, Emma

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Emma Sautman

Abstract Name: **The role of daf-12 in the post-embryonic neuronal development of C. elegans**

While significant advances have been made regarding neuronal development during embryonic stages, there is a gap in knowledge pertaining to the mechanisms that control post-embryonic neural development and maturation. Preliminary evidence suggests that vitamin D and its cognate vitamin D receptor (VDR) play important roles in these areas. VDR is an exciting candidate to examine as it responds to environmental stimuli by binding to nutritionally derived ligands, while its regulation is also under tight control by intrinsic genetic regulatory pathways. This project aimed to identify the mechanism by which VDR controls post-embryonic neuronal development and maturation. To examine this relationship, the temporal expression pattern of daf-12, a homolog of the VDR in C. elegans, was examined in the C. elegans post-embryonic nervous system using a GFP-tagged expression reporter, generated using CRISPR-Cas9. This was used to identify key neurons that were expressing daf-12 as well as the developmental stages in which this expression changes. Once these critical stages were established, the locomotory behavior of control worms was compared to that of daf-12 mutant worms, with early results indicating “juvenilization” of locomotor behavior in mutant worms. Since movement is closely tied to neuronal development, alterations in the maturation of locomotory behavior in daf-12 mutant worms suggest that daf-12 is involved in the regulation of neuronal maturation and gives direction to further studies of the mechanism by which daf-12 controls neuronal maturation. These directions include profiling the daf-12 mutant transcriptome to identify the downstream molecular targets of daf-12. Additionally, we are using a candidate approach to examine ins-6 and ins-9, as potential targets of daf-12. More broadly, the data gathered in this project aims to advance our understanding of neuronal development and how dysregulation of gene-environment interactions can contribute to neurodevelopmental disorders such as intellectual disabilities and autism.

Savin, Mackenzie

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: English/Linguistics

Author/Contributors:
Mackenzie Savin,
Kelsei Cecil

Abstract Name: **Unity, Progress, & Activism in Milwaukee's Urban Neighborhoods**

For the third year in a row, Milwaukee has beaten its own homicide record. It is believed heavy policing is the answer to these societal problems, but many Milwaukee activists say that its investment in community programs would lower crime rates. With the guided help of Program the Parks director and activist, Vaun Mayes, we have been able to identify, investigate, and interpret these Milwaukee and Wisconsin racial-based issues in our documentary. It is with insight from these community leaders we have documented them creating events for youth, such as lock-ins, basketball tournaments, and park clean-ups. Through Vaun’s conversation with former Milwaukee police officers, Pamela Holmes and Ricky Burems, they discussed the need for police to form trust with the community itself. These solutions have come specifically from black police officers and have already been thought of, just not implemented. Some of the main topics we have chosen to focus on include urban crime being covered in the media while ignoring black success stories, the importance of leading youth with the help of community programs and leaders, and pushing local community members to run for office. The main solutions we have discovered and have encouraged are violence prevention, violence interruption, suicide prevention, incident de-escalation, social justice, and community building. Throughout our research, and now through the documentary we’ve created, we’ve been able to highlight community members who have their boots on the ground and are spreading awareness about these topics. By all of us continuing to put the work in, we can create a greater impact through unifying when trying to support these communities. These solutions can be beneficial for all.

Savu, Alexandra-Ana-Maria

Institution: ***TX - Southern Methodist University***

Discipline: English/Linguistics

Author/Contributors:
Alexandra-Ana-Maria Savu

Abstract Name: Stylistic Approach to Portraying a Realistic Romance on Screen

Night and Day, a 15-minute short thesis film, follows the romantic journey of a young couple. Emmanuel comes to Gabriella seven years after he unexpectedly left her on their anniversary. When his illegal activities from work began to have an effect on his personal life, Emmanuel knew he could not let Gabriella get involved with this. After years experiencing the harsh consequences of his immature actions, a changed Emmanuel returns, only to see Gabriella taking care of two kids. She has changed as well. As memories interfere with daily routines, the characters question whether their love deserves another chance. The reality of their present conflicts with the reality they used to have, as emotions gain control over their lives. My goals for this short film are to portray how complex love becomes with time, and to encourage young people to dedicate more effort into making relationships work. I express this stylistically by using telephoto lenses with high key lighting, and tilted angles. The editing will focus on capturing reactions, face expressions, getting an intimate insight into the mind of the characters, as the film's goal is to reveal the profound emotion revoked through heartbreak, separation, the loss of love, but also the process of finding it again and regaining trust in the one you love.Viewerswill experience a strong attachment to the characters as they discover the crazy things love makes people do.

Sayre, Tate

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Tate Sayre

Abstract Name: Medium Effects on Hydrogen Bonding and Proton Transfer in Fluoropyridine-HBr Complexes

Hydrogen bonding is a ubiquitous phenomenon in nature, it is the intermolecular interaction which governs many things such as the unique properties of water and the structure of biological macromolecules. This project involves using theoretical models and low temperature infrared spectroscopy experimentsto investigate hydrogen-bonding and proton transfer in a series ofcomplexes of fluoropyridines and hydrogen bromide (e.g., C5F5N-HBr). We are exploring two key issues in this context; i) the extent of fluorination and ii) interactions with chemical environment, specifically inert gas matricies (solid samples of noble gases at temperatures near absolute zero). Theoretical models provide structures (e.g., N-H distance), hydrogen bondenergies, H-Br bond frequencies which closely parallel hydrogen bond strength, and charge density. These can be compared to the respective experimental spectra in solid Ar,N2,Ne which reveal the medium effects. For the stronger systems, we predict proton transfer in the gas phase (C5H5N-HBr) or in inert media for weaker systems (F2C5H3N-HBr) and in the latter case we see a clear signature of this transition in the spectra. In addition, bonding analyses highlight shifts in the electron distribution that not only accompany the transition from hydrogen bonding to proton transfer, but also forecast it to some extent.

Scamehorn, Stuart

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Computer Science/Information Systems

Author/Contributors:
Stuart Scamehorn

Abstract Name: The Canvas 2.0 Project

The Canvas 2.0 project focuses on building user-friendly and user-oriented functionality in a system that can work alongside the Canvas learning management system. The existingorganizationalfeatures for studentsare not user-friendly or do not do exactly what students would like these features to do for them to be successful in their college careers. A semester-long survey of portions of the UWEC student body resulted in a focus on two features in the initial version of the software system, which are: a grade calculator and a student task manager. The grade calculator determines grades a student would have to achieve to obtain a desired final grade in a course. The task manager allows a student to create and save both academic and personal tasks in one place, allowing them toavoid missed deadlines and appointments. These features were by far the most asked for during the survey process, mainly due to Canvas's existing systems either not being user-friendly or simply not functioning the way studentswould like. The system is a Maven-based Java project that incorporates JavaScript, CSS, HTML, and Database technologiesto create a web-based application with a runtime repository. The in-progress system now incorporates the grade calculator functionality and an architectural fulfillment of the task list functionality. The latter is slated for full completion in Fall 2022 and added functionality of creating a persistent database repository by end of Spring 2023. A persistent repository is important for the future of this project because it would allow users to track tasks even if they close the app, which aligns with the intended purpose of the Task List function. The Canvas 2.0 system is an ongoing project development, and we plan to continue to enhance the system's functionality to work alongside the Canvas LMS toward improving its student-centric features.

Scanlan, Anna

Institution: ***IL - Northern Illinois University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Anna Scanlan

Abstract Name: Patterns and Contradictions of Gender Tropes within Contemporary WWII Espionage Film: How Modern Feminist Movements Impact Female Representations

World War II espionage thrillers have been around since the war itself and films continue to be made depicting this historical era. Although WWII spy and intelligence films can be considered their own genre, they arguably still fall under the larger umbrella of WWII films in general. Thusly, tropes and themes within a larger body of WWII films often carry over into the subgenre, including gender-related tropes and themes. In recent years, espionage films have tried to break female characters out of stock typologies, two notable examples being Female Agents (2008) and A Call to Spy (2019). These films succeed in reimagining a number of tropes, but many underlying themes related to women maintain conventional gender stereotypes. My research examines Female Agents, Black Book (2006), Enigma (2001), A Call to Spy, Allied (2016) and The Imitation Game (2014) in the context of a broader body of WWII espionage films in order to analyze changing gender representations and stereotypes in contemporary historical film. This study examines contradictions in the messaging of these films across a broad range of sources, such as the films, their scripts, interviews with various creators, and directors' notes. Their visual elements will be closely analyzed considering historic and cinematic citations, that is, references to key historic and cinematic images. I will analyze the films' representations of historical contexts and popular culture; additionally, modern feminist movements and theory will help guide examination of the films' executions and productions. A potential fourth wave of feminism began in the middle of this influx of WWII espionage film production, allowing for a consideration of filmmakers' motives and audience's perspectives at two distinct points in contemporary history. Overall, this study aims to detect patterns and contradictions in WWII espionage film's portrayals of women, gender, and cultural constructs in relation to modern feminism.

Scarcelli, Rio

Institution: *PA - Duquesne University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rio Scarcelli

Abstract Name: **Social Media & Belonging/Conformity**

The 21st century has been described as the information age with knowledge and communications spanning globally at the push of a button. Social media platforms such as Instagram, TikTok, Snapchat, and Twitter have given all demographics access to express themselves through pictures, ideas, and beliefs. With the ability to obtain a wider audience in years proceeding, it should stand that social connectivity and the broadening of perspectives would come with it. Due to algorithmic processing, however, social media platforms curate and streamline information, advertisements, and profiles that seem to align with a person's interest. Because of this, diversification becomes limited and platforms do not provide the global perspectives they were once thought to achieve. It instead becomes an echo chamber: a confined corner of the internet where opinions, politics, and issues only align with the beliefs of the individual. Coupled with the fast-paced interaction of social media, the attention given to the information is finite and may not be internalized without proper education or mental consolidation. This ongoing study analyzes the correlation between social media usage and belonging/conformity. By interviewing people who use social media for over three hours daily, different demographics will be tested to see what beliefs they are passionate about, how they interact with those beliefs on a social platform, and if they allow other perspectives to be examined based on their site interaction. My prediction is that social media users will have an ineffective interaction with beliefs and political issues due to curated profiles and an inherent desire to align with said profiles. In examining this, my hope is to highlight the current issue with social media news consumption to educate the public about a willingness to diversify perspectivesthat should truly come out in an age of information.

Schaberg, Rhea

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Lainey Walworth *Rhea Schaberg* *Abby Kroeger*
Lexi King *Hannah King* *Lydia Johnson*
Clara Dobratz *Taylor Bangert* *Grace Groh*
Kirsten Rossi

Abstract Name: **Designing a Space to Support Sensory Regulation Within the Eau Claire Children's Museum**

With the recent rebuild and renovation of the Eau Claire Children's Museum, the museum's executive teamelicited the support of students and faculty within the Special Education and Inclusive Practices Department at the University of Wisconsin – Eau Claire to create a sensory room within the museum. The research team was comprised of student volunteers who previously took a class with Dr. Kirstin Rossi aboutplay and sensory pedagogy, as part of the Unified Special Education program. The team began the development process by meeting with executives from the museum and touring the designated space. During the initial visit, the executive team discussed the goals of the museum. The main goalwas to create a designated space for children to regulate themselves and re-enter the museum when ready. Previously, children who were dysregulated usually left the museum and ended their visit early. With these objectives in mind, student researchers used their learning from the aforementioned class and gathered further information on sensory integration to develop and design specific spaces in the sensory room. Within the design,all eight senses were supported through equipment, spacing, and materials. Additionally, a space was created toprovide a specific area for children to calm their bodies. The last project component was to identify materials and tools that would help children successfully reengage into the larger museumonce re-regulated. The sensory room was designed to be open to a variety of children while also providing tools and information for families to better understand their child's sensory needs, regardless of age or ability. Beyond the sensory room itself, informational materials were also created to share that increase community understanding of sensory needs and integration. This poster presentation will outline the research process and project development, including the final design and use of the space.

Schad, Abigail

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Public Health

Author/Contributors:
Abigail Schad *Jintao Xu* *Michal Olszewski*
Kristie Goughenour

Abstract Name: Relationship of BATF3-Dependent Conventional DC1s to Type 1 T Helper Responses

Cryptococcal meningitis affects 150,000 people each year, killing 112,000 of them. Anti-fungal drugs are limited, and immunocompromised individuals are especially at risk for infection. Further study of dendritic cells–essential in host defenses–will help to develop new immunotherapies and vaccines to treat cryptococcal infection. Dendritic cells are heterogeneous and different subsets play different roles in the immune response.Our previous study showed that BATF3-dependent conventional DC1s (cDC1) are important for Type 1 T helper responses critical for fungal clearance. How cDC1s contribute to Type 1 T helper responses is still unclear. We are therefore interested in understanding how cDC1 promotes Type 1 T helper polarization. We hypothesize that cDC1 is the major producer of cytokine IL-12, which can stimulate Type 1 T helper polarization.Methods: Using intratracheal (IT) surgery, we will inject cryptococcus directly into the trachea of mice. They will be harvested 14 days post-infection. Through flow cytometry, we can identify cDC1 using XCR1 and SIRPa markers. We will then detect IL-12 cytokine production of cDC1s and other cells by intracellular flow cytometry. Expected results: We expect to find that cDC1 produces large amounts of IL-12 cytokine, supporting our hypothesis that cDC1 promotes Type 1 T helper polarization through IL-12 production. If so, we will administer IL-12 cytokine in cDC1 deficient mice and expect that Type 1 T helper polarization will be restored. We may see cells like cDC2 also secrete IL-12, suggesting that cDC1 is not the only source of IL-12 during cryptococcal infection. Our major conclusion from this experiment is that cDC1 promotes Type 1 T helper response through IL-12 production. Studying the role of cDC1 in Type 1 T helper polarization helps us better understand host defense mechanisms against cryptococcal infection. Modulating cDC1 and its pathway may be important for designing new treatments for cryptococcus.

Schad, Katelyn

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sara Kuzbiel,
Katelyn Schad,
Nathan Tran,
Stacy Chamberlin

Abstract Name: Stabilizing the Dimer of Non-Structural Protein 9 in SARS-CoV-2

SARS-CoV-2 is an RNA+ virus that is directly translated by the host cell to produce non-structural proteins (Nsp 1-16) essential to the replication of viral RNA.One interesting non-structural protein, Nsp 9, contains an unusual OB-greek key motif known in other viruses to bind single stranded RNA working with the helicase to allow efficient replication. Additionally, this protein is thought to dimerize for efficient RNA binding; however, the specific mechanism of dimerization and the interaction between this dimer protein and a cognate RNA sequence are currently unknown. To better understand the requirements for dimer Nsp 9-RNA binding, we have made a cysteine mutant to covalently stabilize this dimer. Tryptophan fluorescent studies have been developed to determine differences in binding affinities of both RNA and DNA sequences to help identify requirements of complex formation between Nsp 9 and, an as of yet, unidentified cognate RNA. Initial studies indicate binding of an RNA pseudoknot structure could aid in sequestering Nsp 9 to untranslated regions of the viral RNA.

Schaefer, Gavin

Institution: *MO - Rockhurst University*

Discipline: **Biology**

Author/Contributors:
Gavin Schaefer,
Marci McCann,
Dr. Chad Scholes

Abstract Name: **Simulated Rooftop Prairie Plant Community Comparison to a Prairie Remnant Plant Community**

In 2008, in downtown Kansas City Missouri, a 14,000-square-foot rooftop prairie garden was established in a 4-inch coarse substrate. 15 years later, the garden consists of a self-organized community of native prairie plant species. In novel anthropogenic conditions, we compared this simulated plant community and its comparable ecosystem. A restored prairie remnant, Jerry Smith Park, served as a comparative community to the rooftop. We observed species richness and abundance via the Daubenmire Quadrat Method over three sampling plots: the rooftop garden, an unmanaged field in Jerry Smith, and a recently burned hillside in Jerry Smith. In a three-month sampling period, 77 plant species were observed. The three plots were compared using functional group percentages, Conservatism Coefficient (CC) means, and Floristic Quality Index (FQI) scores. The rooftop prairie Conservatism Coefficient means were similar to both prairie remnant sites. The rooftop prairie had lower FQI scores than the managed site, but similar scores to the old field site. The rooftop had higher abundance of native forbs compared to both Jerry Smith sites. While both remnant sites had higher abundances of grasses, sedges, and rushes, the managed plot had a significantly higher abundance of native graminoids. Within Jerry Smith, we observed higher abundance of native species overall. However, they varied throughout the sampling season. These differences are reflective of the abiotic and aesthetic pressures on the rooftop garden. Contrasts between the remnant plots are representative of the management they have received.Similarities found between the rooftop and remnant sites offer insight into the bridge between anthropogenic environments and reference sites. Further research comparing the biotic and abiotic structure and function of different prairie remnants to anthropogenic prairie communities is warranted.

Schaefer, Jessica

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Jess Schaefer

Abstract Name: **(Im)Proper English: Exploring Identity with a Stigmatized Accent**

Contemporary research has focused on how English speakers perceive those with accents, but as the United States grows in diversity and societal expectations change over time, there are always new voices to be heard. My project centers on those with stigmatized regional and non-native accents who regularly have in the past or to this day face discrimination and prejudice due to their perceived accent. This study draws from published ethnographies that detail experience and ideology as perceived by those who use a stigmatized variety of non-standard English, supplemented by additional stories contributed by students and professorsfrom the University of Wisconsin La Crosse. This study relies on snowball sampling to acquire a select few knowledge-rich individuals who willparticipate in small focus groups and individual interviews. The space will be used to openly discuss linguistic discrimination and its effects on these individuals within their various identities as a student, employee, family member, and friend. Notes and recordings from each session will be coded with patterns assigned to themes relating to identity, community roles, and self-image. Upon conclusion, this project intends to determine themes that link individuals in their struggle with stigmatization and identity. These findings will provide insight into the perspectives held by those who experience accent discrimination and provide a stepping stone to further human rights in modern times.

Schaeppi, Brendan

Institution: *MN - University of Minnesota - Duluth*

Discipline: Psychology/Neuroscience

Author/Contributors:
Brendan Schaeppi,
Drew Dietzler,
Jared Boots

Abstract Name: **Effects of Cognitive Priming on Problem Solving Ability**

Successful problem solving encompasses different cognitive mechanisms: executive functions, divergent thinking, and convergent thinking. Executive functions are generally defined by our individual capacity of: shifting, inhibition, and updating. Divergent thinking revolves around the ability to generate multiple ideas for potential solutions to a given problem. Convergent thinking is the mode of thinking associated with finding a singular, optimal answer. It has been found that a great deal of the failures on the Cognitive Reflexive Task (CRT)-the principal measure of an individual's ability to override an "incorrect gut response" (Frederick, 2005), are a result of a failure to properly explore a problem space (i.e, 61% of incorrect responses did not think about their answer (Szaszi, 2017). This failure to explore a problem space is why we hypothesize that individuals who are primed to think divergently will perform better on the CRT, and conversely that individuals who are primed to think convergently will perform worse on the CRT. Overall, there was not a significant difference between the priming groups on overall Cognitive Reflexive Task performance: $F(2, 48) = 1.68$, $p = .37$. The Convergent group had a lower CRT score than the Control and Divergent groups, however this was nonsignificant. While there was no statistically significant sex difference, a visual analysis of the line graph indicated that there were different trends for males versus females. As a result we conducted separate ANOVAs for males versus females. We did not find a significant effect for females ($F[2, 27] = .02$, $p = .98$), or a statistically significant effect in males ($F[2, 21] = .59$, $p = .57$). While we did not find statistical significance, it is possible that with a larger sample size statistical significance could be found, as evidenced by the difference in p values (.98 for females versus .57 for males).

Schafner, Kallie

Institution: *WV - West Virginia University*

Discipline: Biology

Author/Contributors:
Kallie Schafner,
Madison Seman,
Timothy Nurkiewicz,
Elizabeth Bowdridge

Abstract Name: **PROPYLENE GLYCOL AND VEGETABLE GLYCERIN INHALATION EXPOSURE INCREASES CIRCULATING XANTHINE OXIDASE IN PREGNANT DAMS**

West Virginia has the sixth highest prevalence of electronic cigarette (e-cig) use in the country.An excess of circulating free radicals, highly reactive unstable molecules, from e-cig use may cause tissue and organ damage especially during gestation when the fetus is developing. Therefore, we examined the effects of propylene glycol and vegetable glycerin (PG/VG), the main liquid components in e-cigs, inhalation on maternal and fetal outcomes. Pregnant Sprague-Dawley rats were randomly assigned to sham-control or a PG/VG 50:50 ratio. Whole body e-cig inhalation exposures were performed (90 min/exposure; 30 W atomizer; 6d) during gestational days 10-19, with the last exposure occurring 24 hours prior to sacrifice. Mean exposure chamber aerosol concentration was 569 ± 56 mg/mL with particle size ranging between 100nm(ultrafine) and 1nm(fine).Plasma xanthine oxidoreductase activity was elevated 3-fold in PG/VG dams compared to sham-control (0.05). Additionally, placental xanthine oxidase activity was increased in the PG/VG group (6.50±0.51 mU/mg) versus sham-control (3.65±0.42 mU/mg; 0.05). Pup and placental mass were reduced in the PG/VG group (2.1±1.1 g;0.6±0.2 g) compared to sham-control (3.3±0.7g;0.7±0.1 g; 0.05).Placental efficiency (grams of pup/gram of placenta) was also reduced in PG/VG dams (3.7) compared to sham-control (4.4; 0.05).In maternal plasma, prolactin levels were decreased in sham-control (2.31±0.05 ng/mL; 0.05) versus PG/VG.PG/VG inhalation exposure during pregnancy may have adverse effects driven by free radicals on maternal and fetoplacental tissues.Support: WV-CTSI NIH-U54 GM104942-05; NIH-K01 OH12320 (ECB),NIH-R01 ES015022 (TRN)

Schamanek, Jessica

Institution: *MI - Hope College*

Discipline: **Education**

Author/Contributors:
Jessica Schamanek *Adriana D'Agostini*

Abstract Name: **Investigating a Local Elementary School?s Implementation of the Next Generation Science Standards**

Next Generation Science Standards (NGSS) are being implemented by K-12 schools throughout the United States. The Outdoor Discovery Center (ODC), a nonprofit education organization, partnered with a school in West Michigan to assist their K-5 teachers with implementation of NGSS throughout the 2021-2022 school year. The purpose of this research was to determine how effectively the elementary school teachers incorporated NGSS into their science lessons, how engaged students were during the lessons, and how comfortable the teachers were with the new standards. Researchers collected data using interviews, focus groups, and surveys from three sample groups: teachers (n=24), students (n=7), and ODC ambassadors (n=4). Qualitative data were analyzed with NVivo software using inductive methodology to determine major themes. Quantitative data were analyzed using a Wilcoxon Signed Rank Test in SPSS to determine if there were changes in teachers' attitudes over time. Qualitative results revealed that teachers often felt overwhelmed with integrating NGSS because of a lack of time, difficulties gathering appropriate learning resources, and a lack of content knowledge. However, teachers persevered and continued with implementation as they observed increased student engagement, gained experience with the new standards, and received support from the ODC. Survey data indicated most teachers felt more comfortable with this style of teaching by the end of the year, but they recognized there was room for improvement. Specifically, teachers wanted to develop more robust assessment tools, schedule more co-planning time with each other and the ODC ambassadors, and engage in more professional development to increase their content knowledge and gain experience with NGSS-based pedagogy. The research team also noted that more science and engineering practices could be incorporated into the elementary lessons. Nevertheless, the first year of implementation laid a foundation for the future of effective incorporation of NGSS in this elementary school.

Scheibel, Mackenzie

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Jena Burton,
Mackenzie Scheibel,
Sabine Heuer, PhD CCC-SLP

Abstract Name: **Understanding Word Finding in Older Adults; Image Naming Norms Across the Age Range**

Introduction: Image naming tasks are used to better understand the linguistic processes of word finding in people without and with neurologic communication disorders such as aphasia and dementia. Neurologic communication disorders become more common with increasing age. However, word finding is affected in both, healthy aging adults and people with neurologic disorders. Therefore, norms for image naming in older adults are important for defining what constitutes normal performances and to refine markers for impaired word finding. To date, norms for image naming in older adults are lacking. The purpose of this study is to provide norms for older adults free of neurologic impairments on a large set of photographs of everyday objects, normed on younger adults, the Bank of Standardized Stimuli (BOSS).Methods: Thirty-five participants were recruited. All are native speakers of English, at least 50 years old, and free of neurologic deficits. Each participant was presented with 600 photographs derived from the BOSS on a computer screen and was asked to name each image as quickly and accurately as possible. The responses and response times (RT) were recorded. Accuracy, RT, modal name, and name agreement were analyzedResults: Preliminary results revealed a mean accuracy of 82.48% and a mean response time of 2.204 ms. Modal name agreement indicated an overall 66.34 % agreement across the 600 stimuli. The sample's demographic composition and an analysis stratified by 10-year age bands will be presented.This is one of few studies that provides norms for image naming for adults 50-80 years of age. We aim to collect data for60 older adults. Norms across the age range for image naming are a critical prerequisite for behavioral research that tackles theoretical as well as clinical questions.

Schenck, Heather

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Chemistry/Materials Science

Author/Contributors:
Connor Haindfield,
Heather Schenck

Abstract Name: **Active Learning Pedagogy in Organic Chemistry: Analysis of Final Exam Data**

Organic Chemistry is a notoriously challenging course, required for pre-Health majors, with drop and failure rates commonly in excess of 30-40%. This project examined the effect of active learning on reaction mechanism pedagogy to increase engagement and decrease student failure rates. We studied two semesters with no active learning pedagogy, two semesters with half active learning pedagogy, and two semesters with full active learning pedagogy. Preliminary results suggested that student achievement greatly improved and drop/failure rates were halved when active learning was used, as shown by analysis of formative (ungraded) assessments. Upon review of final exam data of the studied semesters, we found that our analysis strongly supports the preliminary findings from formative assessments and drop/D/F rates. Taken into combination, the aggregate data provide strong support for the effectiveness of active learning in this “hardest college course”. In order to analyze the data in question, we developed rubrics that applied to 6 semesters worth of final exams. Students had better mechanistic understanding and knew how to portray a mechanism better when they were exposed to more active learning in their organic chemistry semester. In these rubrics, students were not given a grade, but rather scored based on individual steps in the mechanisms in question. These scores were based on logic and mechanistic reasoning rather than simple correctness, as our study seeks to analyze the effect of active learning on student understanding rather than memorization of mechanism steps.

Schepis, Ashley

Institution: *MA - Bridgewater State University*

Discipline: Education

Author/Contributors:
Ashley Schepis

Abstract Name: **Teaching Accurate and Age-Appropriate History to Elementary Students: Teaching Third Graders about Historic Thanksgiving**

This educational and historical research is based in teaching accurate and age-appropriate history to elementary students. Unfortunately, history in elementary classrooms is often taught inaccurately to avoid teaching children about the embarrassing and gruesome parts of United States history. When history is taught incorrectly, it can perpetuate stereotypes and it leaves students confused when they reach secondary and higher education and discover that some of what they know is incorrect. The purpose of this project is to investigate what really happened at the 1621 Harvest Feast, assess how to teach this information to children based on developmental appropriateness and create lesson plans for teachers to do just that. First, the research in this thesis consists of exploring the actual historical events of the 1621 Harvest Feast, through primary and secondary historical documents. Second, how Thanksgiving is currently taught at the 3rdgrade level, by reading teaching materials and books used in third grade classroom and an anonymous google form that Massachusetts teachers participated in. Finally, itincludes lesson plans and classroom activities for teaching about Thanksgiving using true accounts of history, based around the Massachusetts State Standards. This research has vital implications for not only how history is taught to elementary students and for helping teachers figure out how to do that; but also, a change in elementary education can positively change the United States’ cultural ideas of Thanksgiving.

Schepp, Evan

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Cody Mrowicki,
Allen Kaplan,
Evan Schepp,
Rhys Love

Abstract Name: **The Mesoscale Conditions that Contributed to the development of the Morton, Texas Tornado on 23 May 2022**

On 23 May 2022, the participants of UW-Whitewater's Field Course on the Forecasting and Verification of Extreme Weather witnessed a tornado in west Texas. The official tornado report had tornadogenesis occurring at approximately 0007 UTC 24 May 2022 (7:07 pm CST 23 May 2022). Based on synoptic-scale (i.e., large scale) conditions most of west Texas from the US-Mexico border into the Texas panhandle were under the threat of severe weather on this day. While in the field and in the post-mortem analysis of this day it was determined the mesoscale conditions were the main factor as to why a significant tornado occurred in the west Texas region near Morton. Mesoscale conditions were evident during the course's morning weather briefing using various mesoscale forecast models. As the day progressed and conditions changed slightly, adjustments were made by the course participants that allowed them to witness the development of the thunderstorm that would end up producing a dust storm (with straight-line wind gust up to 80 mph) and large hail (1.5 – 2.5 inches in diameter). In the post-mortem analysis, a detailed analysis of the mesoscale conditions was performed with additional data from mesoscale networks around the west Texas region. This post-event analysis did find that a localized area of enhanced shear formed near the Morton area due to a surge of dry air out of eastern New Mexico. Preliminary results show that this surge of dry air interacted with an outflow boundary from the earlier developing thunderstorms. The interaction of these differing boundaries created a small area of enhanced lift and wind shear that allowed one of the on-going thunderstorms to intensify and produce an EF2 tornado that occurred 7 miles north of Morton, which the course participants witnessed.

Schiller, Megan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Lilli Roubinek *Jeremiah Rumsey* *Megan Schiller*
Peng Tan

Abstract Name: **Investigating Trends and Patterns in Climate Change Views of UW-Eau Claire Students Using Survey Data from 2017, 2018, 2021 and 2022**

Climate change (CC) is perhaps the most important issue of our time. Citizen public opinion will likely be a significant determining factor regarding if/when CC mitigation policies will be enacted. Additionally, news media reports suggest that young people, including college students have been increasingly active in terms of calling for action to address CC. Surveys were conducted among UW-Eau Claire (UWEC) college students in 2017, 2018, 2021 and 2022 (N=475) to provide a case study of college student views on CC. A CC index (CCI) score was calculated using responses to questions about if CC is happening and what are its primary causes as well as an understanding of CC science and concern about and obligation to act regarding CC. CCI scores range from -10 to 10 with higher scores indicating more alignment with the scientific realities of CC. Our poster presents CCI score comparisons across years as well as by age, gender, major and political ideology including an ordinary least squares regression analysis. We will provide additional context by comparing our UWEC student results to similar work we have done comparing CC views between American and Chinese citizens from multiple survey years. Our findings suggest that UWEC students are more aligned with the scientific realities of CC compared to both American and Chinese citizens overall. Moreover, although the variation in CC views among UWEC students is less than for American citizens overall, it is greater than what we see among Chinese citizens. Lastly, our results also show a similar political pattern in UWEC student CC views as what we find among American citizens overall with conservatives/liberals being the least/most aligned with the scientific realities of CC respectively. This poster is connected to another submitted poster analyzing new data from surveys conducted of WI college students in 2023.

Schlieckau, Jardon

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Physics/Astronomy

Author/Contributors:
Jardon Schlieckau

Abstract Name: **Determining the Survivability Parameters of Mirror Satellites**

In the circumstance where a planet is tidally-locked it means that one side of the planet is constantly facing the sun whilst the other side is in perpetual darkness. An intelligent civilization could then attempt to expose the dark side of the planet through the use of orbiting mirror satellites that reflect light from the star onto the planet below. This light, or radiation would also exert a force on the mirrors and cause them to drift away from their gravitational orbits, jeopardizing their long-term survivability. Our research tests the survivability of these mirror satellites through the use of computer simulations in a variety of situations. We vary star type, the period during which radiation from the star impacts the mirror, the distance between the planet and satellite, and the orientation of the orbit. We showed that lower luminosity stars, radiation affecting the satellite only when the satellite is above the night side of the planet, and a smaller distance between the mirror and planet were more conducive to mirror survivability. These in addition, satellite orbit orientation of -XY, meaning the satellite is on the same orbital plane as the planet yet traveling in the opposite direction than the planet, tended to produce the longest mirror satellite survivability. The observed trends in mirror satellite survivability and how the aforementioned variables affect one another will be presented.

Schlowak, Paul

Institution: *KY - University of Kentucky*

Discipline: Economics

Author/Contributors:
Paul Schlowak

Abstract Name: **How does alcohol consumption affect life expectancy?**

Life expectancy is one of the most significant indicators for health-related issues. In order to asses the dependents of life expectancy at birth, I will examine the following research question: What is the association between alcohol consumption and life expectancy at birth?I used a panel-data from the World Bank of 217 countries over the period 2000-2021. In contrast to existing literature, it is a very long-term data set that also accounts for the distortions due to the COVID-19 Pandemic. After doing the Hausman test, I ran a fixed model regression with a linear functional form. Besides alcohol consumptions, I included important variables from other categories, like health care, education or socio-economics, that may have major influences on life expectancy. It turned out that an increase in alcohol consumption leads to a significant decrease in life expectancy per country on average over time.In order to assess the significance of the results, I ran several tests, like a t-test, and analyzed statistical parameters, like R squared.There are different limitations to the results. First, many missing observations about alcohol consumption question the significance of the results. Moreover, it needs to be examined in more detail if there are severe limitations such as an omitted-variable bias.

Schmitz, Megan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Megan Schmitz *Emmeline Liske* *McKenna Girdeen* *Nicholas Phillips*

Abstract Name: **The Life and Music of Florence Price**

Born in Little Rock, Arkansas, Florence Beatrice Smith Price (1887-1953) was America's first significant African American woman composer. The purpose of this lecture-recital is to uncover how Price's compositions are a historic symbol for traditional black composers today, revisit her significance in music history, and provide a biographical overview of her life through the exploration of her piano compositions and experiences composing as a Black woman. Graduating with a double degree in solo organ and piano teaching from the New England Conservatory of Music in 1906, Price was deeply influenced by mentors who helped reinforce an African American identity in her music. While living through the Great Migration and the Great Depression, Price slowly gained recognition throughout her lifetime as a prominent figure in the black community by writing piano compositions that included the "juba dance" and other Afro-American characteristics. Linda Rae Brown's findings in The Heart of a Woman: The Life and Music of Florence B. Price, reveal Price faced issues with conflicting roles both as a woman and a composer. With increasing racial tensions in the late 1920s, Price was denied access to professional music organizations such as the Arkansas Music Teachers Association. Although she lived a moderately private life, analyzing gender and race-based marginalization through the lens of Black feminism illustrates how Price challenged prejudicial social structures and contexts. Price challenges these notions by advocating for herself as a Black woman composer, eventually paving the way by fusing Euro-American structures with elements of her own American cultural heritage by emulating plantation melodies and African American folk melodies in her music. This lecture-recital is part of a growing momentum to give further attention to Price's piano compositions and life, which deserve continued further attention from scholars, teachers, and pianists.

Schmoyer, Amaranth

Institution: *NC - Western Carolina University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Amaranth Schmoyer

Abstract Name: **An Analysis of the 'Good Life' Through a Lens of Submission to Institutional Power**

The ideal of the 'Good Life' in the United States is a tool used by dominant institutions to encourage submission to their institutional power and, therefore, assimilation to the abstract of 'the majority.' Drawing on Foucault's Discipline and Punish, along with work by Emma Goldman, Paulo Freire, and studies into police violence, I will argue that punishment, being defined by Foucault as a solely negative action, has created the space into which discipline has stepped, shaping the norm of the Good Life on behalf of dominant institutions. Then, making use of Emma Goldman's idea of the majority in conjunction with Freire's view of populism, I will show that assimilation is presented as the only option to a 'reasonable citizen.' Additionally, I will examine Freire's concept of the 'banking method' of education in schools and policy around use of force in policing to further demonstrate that submission to institutional power is the narrative into which people are encouraged to conform. I conclude with a discussion of the revolutionary potential of power, specifically in an educational setting, in which the Good Life can be redefined as the questioning and subversion of authority.

Schmutz, Karleen

Institution: ***TN - Trevecca Nazarene University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Karleen Schmutz,
Dylan Guardo

Abstract Name: The Relationship Between Mindfulness, Directed Coping and Perceived Stress

With mental health becoming more recognized as a national problem, it is important to study the different aspects of how it affects lives and how it can be improved. Multiple studies have shown the positive effects of mindfulness to improve patients' stress levels through intervention. Studies have shown the preliminary effects of directed coping to also reduce perceived stress levels in people who are in consistently stressful environments. The current study sought to explore the relationship between mindfulness and directed coping skills among college students and their perceived stress levels. It was predicted that there will be a negative relationship between mindfulness scores and perceived stress levels; that there will be a negative relationship between directed coping scores and perceived stress levels, and that there will be a positive relationship between mindfulness and directed coping scores. Through a convenience sample, 183 college students were assessed through a voluntary survey. The survey consisted of the Perceived Stress Scale, the Directed Coping Scale, the Five Facet Mindfulness Questionnaire (Short Form), and a demographics section including age, academic level, and gender items. The results found a significant moderate negative correlation between perceived stress levels and mindfulness scores, a significant low negative correlation between perceived stress and directed coping scores, and a significant low positive correlation between mindfulness scores and directed coping scores. All hypotheses were supported. Recommendations for future research include replicating the research to include a wider range of cultural perspectives and differences in age.

Schnakenberg, Rachel

Institution: ***TX - Lone Star College***

Discipline: Political Science

Author/Contributors:
Rachel Schnakenberg

Abstract Name: Legislative and Regulatory Responses to Houston-Area Flood Events Since 2015

This research investigates three NOAA-designated “billion-dollar” flood events in Houston, Texas, in relation to their influence on flood-specific legislation at state and local levels. A review of the literature, as well as flood related bills and laws between 2015 – 2021, indicates that the interrelationship between increased frequency of flood events and the volume of flood legislation following a significant event has received little scholarly attention. To investigate this relationship, two semi-structured interviews were conducted with Dr. Phillip Bedient, director of the Severe Storm Prediction, Education,; Evacuation from Disasters Center at Rice University, and Texas State Senator Brandon Creighton of District 4. The collected interview material elucidates the complex and political nature of storm event management and legislation pertaining to flood control and mitigation. This research reveals an upward trend in the issuance of flood-related laws and enhanced cooperation between governmental agencies; however, many substantial political barriers to proactive policymaking exist, such as the limited attention of lawmakers and complex intergovernmental relationships. The significant hurdles of organizational boundaries, political agenda—and the reactive nature of existing measures—call for more preemptive policymaking as flood-causing storm events continue to accelerate.

Schneider, Alexandra

Institution: *NC - Elon University*

Discipline: English/Linguistics

Author/Contributors:
Alexandra Schneider

Abstract Name: **Exploring the effects of female power depicted in Chinese and Jewish mythology on identity in coming of age narratives**

Jewish and Chinese mythology is filled with stories exploring female power that directly inform literary representation. This creative project examines the intersection of racial, gender, and religious identity, by critically drawing from these Jewish and Chinese depictions. In recent years, the term intersectionality has been used to describe individuals or subsections of society who identify with a variety of social markers. Conversations about the overlap of Asian Jews —my primary identity— however, have not yet reached the forefront of scholarly or popular works. For instance, mythological beasts, power, sexual agency, and the role of women are explored in both canons. Using various genres, my final portfolio works to address this lapse in representation and give voice to diverse demographics by creating literature in predominantly white spaces. Through speculative fiction, poems, and narrative essays, this project seeks to examine the collision of personal identity by examining the depiction of power in traditional biblical and cultural mythologies. By engaging in conversations with these traditional portrayals, my writing strives to answer questions about personal, racial, gender, and religious identity. My research will culminate in a collection of works examining power and physicality through the lens of these identities and mythologies. I plan to give an oral reading of my work. By focusing my writing through an introspective lens, my work features stories that connect traditional myths to modern experiences, examining the both effects of the stories we tell and the types of narratives we promote.

Schneider, Kelli

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kelli Schneider

Abstract Name: **Determining Limits of Re-Extraction Using Heated Passive Headspace**

Heated passive headspace concentration is the most common method used for extracting ignitable liquids from fire debris samples. The aim of this research is to determine if there is a limit to the number of times the chemical signature of a “positive” sample can be re-extracted from various matrices and successfully identified by analysts. This research analyzed a combination of substrates that are commonly found as flooring in residential and commercial buildings to determine if the interference from the pyrolyzed products would affect the results of the re-extraction. A standard 50%/50% mixture of gasoline and diesel was used as the standard ignitable liquid to broaden the visible pattern when analyzed by gas chromatography. Volumes of this combination of ignitable liquids ranged from 1 mL down to 30 µL. Unburned liquid standard was placed on Kimwipes to serve as a control while other samples contained typical building materials found in arson debris. The samples were burned using modified destructive distillation and extracted by passive headspace concentration. The re-extractions were performed, and analysis interpreted until the positive determination was no longer upheld by trained criminalists. Of the materials tested, the burned debris had the most difficulty in the determination of both ignitable liquids. The interference from the carpet and soft wood overlapped the identification pattern of the mixture which prevented the analysts from confirming both. The re-extractions of the other matrices were also analyzed and observed specific trends. Degradation of the alkane pattern occurred after several extractions of the Kimwipe while the unburned combination observed a skew towards the lighter compounds. In summary, the experiment showed that re-extraction produces repeatable results for at least three attempts in each condition; however, the complexity of the burn debris prohibits a universal statement on reliability beyond that number of re-extractions.

Schneider, Mikaela

Institution: ***WI - University of Wisconsin-La Crosse***

Discipline: Sociology

Author/Contributors:
Mikaela Schneider

Abstract Name: Estimations, Ambitions and Achievements: An Examination of Parental Factors and their Effect on Students Educational Aspirations and Attainment

The impact that parental socialization has on a child cannot be understated, particularly as it relates to a child's educational experiences and outcomes. Research has thoroughly explored the relationship between parental factors, such as socioeconomic status and education-level, and theirchild's level of educational attainment as an adult. What is less understood, however, is what factors are most important in explaining the disparity between educational aspirations in relation to the actual education that a student completes. Utilizing data from the Youth Development Study, this study seeks to identify the relationship between students` educational aspirations in high school to their actual educational attainment collected at age thirty. Analyses will examine the difference between educational aspirations and actual attainment and which factors influence both. The Youth Development Study is a longitudinal panel survey that collected data from both parents and their children(N=1,010). Path analysis was used to identify the direct effect of educational aspirations on educational attainment while controlling for other demographic and structural factors and indicate the indirect effect of the exogenous variables on educational attainment through educational aspirations. The results indicate that parental aspirations and education level, along with specific individual level demographic measures, had the strongest effect on a child's educational attainment. The implications related to familial and educational policy will be discussed.

Schneider, Trever

Institution: ***WI - University of Wisconsin-Parkside***

Discipline: Chemistry/Materials Science

Author/Contributors:
Elise Zevitz *Hunter Cheney* *Trever Schneider*

Abstract Name: Evaluation of esters of hydroxycinnamic acids as UVB-UVA filters in emulsion: A naturally sourced alternative to synthetic UV filters in commercial sunscreens

Synthetic UV filters approved for use in US sunscreen formulations have come under increasing scrutiny in recent years due to the suspicion of undesirable effects on human health and the environment. A growing body of research points to their potential for endocrine disruption, and recent state legislation in both Florida and Hawaii banned two of the most common of such filters — octinoxate and oxybenzone — upon evidence of coral bleaching and toxicity to marine life. Plant-based hydroxycinnamic acids (HCAs) and their corresponding esters have been shown to absorb in the UVB-UVA (290–400nm) region of solar radiation. This study sought to evaluate the UV-filtration potential of these compounds in emulsion, against existing commercial sunscreen filters.In the first phase of the project, three HCA derivatives (ferulic acid, sinapic acid, and 3,4-Dimethoxycinnamic acid) were each converted into their respective ethyl esters by Fischer esterification under microwave irradiation. The same process was used to synthesize isopropyl esters of the three HCA derivatives. Following isolation and purification by column chromatography, each ester product was incorporated by weight in combination with up to 3% avobenzone into a separate sunscreen emulsion and subsequently applied to a polymethylmethacrylate plate for UV-Vis spectrophotometric transmittance testing.Nearly all HCA-based sunscreens performed on par with or more effectively in blocking UVB-UVA radiation than a commercial sunscreen formulation containing a combination of synthetic UV filters (specifically homosalate, octisalate, octocrylene, and 3% avobenzone) at a much higher concentration. Ethyl ferulate- and ethyl sinapate-based sunscreens offered the best coverage across the UVB and UVA range, minimizing the need for avobenzone.The in vitro data generated from this study suggest that each of the naturally sourced HCA-derivatives has the potential to offer an exciting alternative to the cocktail of synthetic UV filters in sunscreens currently available in the US.

Schnoebelen, Grant

Institution: *IA - Iowa State University*

Discipline: Economics

Author/Contributors:
Grant Schnoebelen

Abstract Name: **Impact of Recessions and Additional Government Funding on the price of Road Construction.**

Every year, the state of Iowa solicits bids for work needed to maintain or expand the roads, highways, and bridges in the state. During recessions, the federal and state governments tend to expand government spending for transportation projects to help stimulate the economy. As an example, the American Recovery and Reinvestment Act of 2009 allocated $839 billion for projects. However, there are a finite number of firms that can fulfill the specified project responsibilities. If the number of projects out for bid is too large, it can tax the available capacity of construction firms to complete all the projects and the cost of construction will be bid up. Providing clarity on the effectiveness of this spending is important when there are billions of dollars being spent. In this paper, using Iowa Department of Transportation Bid Data from 2007 through 2019, I examined whether bid amounts rise in years when the government expands the number of projects, and whether construction costs rise in recession years.

Schoeck, Spencer

Institution: *MN - Minnesota State University - Mankato*

Discipline: Physics/Astronomy

Author/Contributors:
Roman M. Faught,
Mark Gutierrez,
Samantha A. Sunnarborg,
Jeremy T. Derhaag,
Spencer A. Schoeck

Abstract Name: **Radiation dose studies in fruit flies with 350keV electrons**

The effects of beta radiation on fruit flies (Drosophila Melanogaster) were studied using the Applied Nuclear Science lab AN400 accelerator modified for electron acceleration and extraction. Dose-dependent effects up to 800 Gy have been observed, with significant effects well below the LD-50 dose for 2-day old larvae. These effects include reduced larvae and aborted development to adulthood. The goal of establishing a population of viable adults in samples showing clear radiation dose effects to study inherent radiation resistance has now been met. The data gathered in the process of this experiment will be used to further calibrate the accelerator for future research.

Schofield, Madison

Institution: *VA - George Mason University*

Discipline: **Communication/Journalism**

Author/Contributors:
Madison Schofield

Abstract Name: **College Students Understanding of Bias in the News**

As young voters, college students make up a key demographic during election season; Thus, it is important for them to be aware of current events in the world and potential bias in political news, particularly as studies have shown that bias is prevalent in the news and can impact voters opinions. This study is interested in investigating how well college students can detect and understand bias in the news. This will be studied by surveying a group of college students (target sample size = 100), showing them different stories from different news media organizations, and asking them about whether or not there is bias and for whom the bias favors. Comparing these results to the Ad Fontes Media Bias chart will show how well college students can recognize bias compared to a professional board of fact-checkers and journalists who regularly score news organizations on bias and reliability. These results will offer insight into if college students need further education on bias and how to recognize it. I plan to collect data through February 2023 and complete the analysis by early March 2023.

Schrader, Janee

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Mathematics**

Author/Contributors:
Janee Schrader

Abstract Name: **GCD of sums (and sums of square) of k consecutive terms of the Pell sequence and related sequences**

We explore the GCD of all sums of mthpowers (with m=1and 2) of kconsecutive terms of a sequence Snwith n greater than or equal to 0, where the terms Sncome from exactly one of following six well-known sequences: Pell Pn, associated Pell Qn, balancing Bn, cobalancing bn, Lucas-balancing Cn, and Lucas-cobalancing cn numbers. For brevity, we use the symbol Sm(k) to denote this GCD. We give a complete description ofS1(k) for all six sequences. These closed forms all involve certain braid sequences of Pell and associated Pell numbers in an intriguing manner. We further give partial results on S2(k) for some of the sequences. We collected data through Wolfram programming in Mathematica to gather conjectures and provide further evidence of the results that we inevitably proved.

Schrock, Aleah

Institution: *VA - Liberty University*

Discipline: History

Author/Contributors:
Aleah Schrock

Abstract Name: **?A Question of Defenselessness:? The Diverging Evolution of German and American Mennonite Communities, 1854-1945**

In the 1930s and 1940s, American Mennonites retained their traditional pacifism while their German coreligionists supported Adolf Hitler's Nazi regime. While most American Mennonites remained conscientious objectors, many German Mennonites joined the Nazi Party, Wehrmacht, and SS, and supported Nazi ideology. Through examinations of religious periodicals, letters, contemporary writings, and Mennonite World Conference proceedings, this paper examines and compares the evolution of German and American Mennonite identities from the mid 19th to the mid 20th century to identify the internal factors allowingfor this development. Though German and American Mennonite communities shared historical roots and developed closer international connections in the 19th and 20th centuries,differences in German and American societies contributed to differing understandings of Mennonite doctrine, practice, and identity. American religious freedom, ecclesiastical plurality, and celebration of individualism allowed American Mennonites to develop in a unique direction characterized by emphases on insularity, non-resistance, and non-conformity. By contrast, German militarism, nationalism, and church-state relations pushed German Mennonites to emphasize their identity as a non-state-supported free church and characteristics such as adult baptism, democratic church structure, and ethnic identity at the expense of uncomfortable historical doctrines like non-resistance. These differing self-identities provided a pre-condition for the two groups' differing responses to pressures in the 1930s and 1940s. Understanding these pre-conditions allows for a better understanding of church-state relations in German and American society leading up to the Second World War, the influence of nationalism, religious freedom, and cultural debates on sectarian communities, and the way in which historical identities and doctrines can be pushed aside or twisted to support evil.

Schroeder, Devon

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Devon Schroeder,
Gabriel Clark,
Ryan Smith,
Isacc Sundermeyer,
Dylan Wells

Abstract Name: **Perception of Information and Source Reliability B**

The term misinformation is being used so frequently now that it has become an annoying word to represent almost nothing. The perception of whether information is valid seems to be very dependent on who is giving the information. There are many different factors that play a role in deciding whether a source is credible or not. In the US today we are seeing that individuals are siding with news sources that have a similar political ideology when deciding what is fact and what is misinformation. The purpose of this research is to determine what factors correlate with someone'ssuseptiblity to misleading information. The personal characteristincs being studied include racial/ethnic background of the messenger and receiver, political ideology of the messenger and receiver, news media source preference, expertise level of the messenger and receiver, and percieved trustworthiness of the messenger. The study will use information about controversial topics given by various sources and determine the level of confidence the subjects have about the legitimacy of the information. Demographics regarding the subjects will be collected. A correlational analysis will be made between traits of the message sender and receiver and the rating of the source information. Data analysis will be completed in the spring semester of 2023.

Schroeder, Sydney

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ethan Olerich,
Matt Poppitz,
Sydney Schroeder,
Nathaniel Severson,
Madison Shepler,
Sudeep Bhattacharyay

Abstract Name: Investigating the Folding of Intrinsically Disordered Cyclin-Dependent Kinase Inhibitor-Interacting Protein Using High-Performance Computational Simulations

Cyclin-dependent kinase inhibitor 1-interacting protein 1 is involved in the cell cycle regulation via mediation of the G1 growth arrest pathway for DNA damage-induced repair checkpoints. They fall into the group of intrinsically disordered proteins, which do not require a complete globular structure to perform their function. The intrinsic disorders of the class of protein allow alterations of its topology while conserving binding sites. Due to the absence of reliable three-dimensional structure, the folding and the conformational dynamics have remained poorly understood. In particular, a comprehensive understanding of the relationship between protein folding and other biomolecular crowders is absent. Herein, we report a classical mechanical simulation-based study of the protein using various-sized crowders of the polymers of ethylene glycol. The protein 3D structure was downloaded using AlphaFold - the database created by artificial intelligence-aided protein structure solving. Five systems were constructed: one in only water, one in ethylene glycol, and three more in polyethylene glycols of various molecular weights (600, 10k, and 20 k). A 50 ns molecular dynamics simulation data was used for further analysis. The effect of these crowders on the folding dynamics and energetics was studied in detail using visualization, computational, and statistical tools. Results obtained from these studies will be presented.

Schuebel, Mikayla

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Marissa Niehoff,
Miikayla Schuebel,
Charlotte Clark

Abstract Name: Fostering collaboration between parents and speech language pathologists : What impact do motivational interviewing strategies have on parent-child reminiscing intervention?

The literature on parent-child reminiscing conversations from the various disciplines, including developmental psychology and communication sciences and disorders, indicates that these brief and routine conversations about shared, past experiences can have a positive impact on a child's developing language, cognitive, and socio-emotional skills. However, families can reminisce in a variety of styles depending on their culture. Motivational interviewing is a counseling style that aims toguide clients toward developing their own solutions as grounded in their personal values and priorities. With our project we ask the question, "What impact do motivational interviewing strategies have on the collaborations of parents and clinicians of different cultural backgrounds during reminiscing interventions?" To answer this question, we have thus far recruited two families- onemonolingual English speaking family with a preschooler diagnosed with a language delay.; one bilingual family (English and Japanese) with an adolescent boy diagnosed with ASD and TBI. We are video recording our collaborations and parent-child reminiscing. Inductive methods of analysis are employed to identify behaviors that contribute or interfere with effective collaboration between the clinician and parents. Collaboration methods will be refined after initial analysis and additional families recruited for further study. Understanding ways to foster better collaboration with families is essential to creating individualized and culturally sensitive interventions.

Schug, Samantha

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: **Biology**

Author/Contributors:
Samantha Schug

Abstract Name: **Tide Pool Mollusk Diversity Relative to Tide Level, San Salvador Island, Bahamas**

Tidal pools offer a unique environment due to fact that the water levels change twice a day. Because small tidal pool mollusks experience the flux of tides daily, I investigated if there were changes in mollusk diversity relative to tide level (high vs. low). I hypothesized that there is a relationship between mollusk species and the specific tide level. I predicted that there would be a unique suite of mollusk diversity at the two different tides. Data was collected between 9 – 11 March 2022 at Graham's Harbor Government Dock (San Salvador Island) during daylight hours and at different tidal times. Tidal pools were inspected and for each pool, mollusk species were counted and recorded. To keep my collection effort consistent, data was collected from the same area each trial, marked by a metal pole in the rocks. Data was analyzed using a $\chi 2$ test of independence. Data results suggests that there was a difference in mollusk diversity between high and low tide ($\chi 2 = 5.58$, df =1, $p = 0.018$). This implies that mollusks, despite having a muscular foot that can hold them in place in a pool, may not be as resistant to tidal water movement as previously thought. This research contributes to the knowledge base of tidal pool mollusk diversity as it shows that daily changes in tides can impact which species are present.

Schuld, Jessica

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **FAN Abstract**

Author/Contributors:
Catherine Chan *Jessica Schuld* *Scott Cooper*
Julie Dresen *Cheri Barta*

Abstract Name: **The Wisconsin Council on Undergraduate Research: Working Together to Promote and Support Undergraduate Research, Scholarly and Creative Activities**

Undergraduate research, scholarly, and creative activities (URSCA) have a long history in the University of Wisconsin System (UWS). Since 1999, various system campuses have hosted the UW System Symposium, an annual gathering modeled after the National Conference on Undergraduate Research. It brings together undergraduate researchers, their mentors, and program coordinators to showcase the accomplishments of and celebrate URSCA. With the support of a National Science Foundation grant awarded to the Council on Undergraduate Research to institutionalize undergraduate research at the system/consortium level, the Wisconsin Council on Undergraduate Research (WisCUR) was formally launched in 2013.The group initially consisted of URSCA program leaders and advocates from UWS institutions. Recently, its membership expanded to include private universities and technical colleges in Wisconsin. Its mission is to provide leadership to advance, enhance, and expand URSCA across the UWS and beyond in order to prepare graduates who can adapt and innovate for the challenges of the future. Since the inception of WisCUR, URSCA programs within the WisCUR network have made great strides. For example, three UWS schools (UW-Eau Claire, UW-La Crosse, and UW-Milwaukee) have won the Campus-Wide Award for Undergraduate Research Accomplishments (AURA). No other state system has received the honor of receiving multiple AURA awards. Partly due to its involvement with WisCUR, Concordia University developed an undergraduate research certificate program and Madison College created an undergraduate research program.Wisconsin higher education institutions have also faced a variety of challenges that require innovations and adaptations, and WisCUR has served as a resource and support in this area. In this presentation, we will share the organization and goals of WisCUR, typical activities (beyond UWS Symposium) we sponsor, and benefits of WisCUR to individual institutions and staff therein. We will provide suggestions on how to organize similar URSCA groups and invite attendees to share their experiences.

Schultz, Cora

Institution: *MI - Hope College*

Discipline: **Theatre and Dance**

Author/Contributors:
Cora Schultz

Abstract Name: **The Heather Cornell Legacy Project**

History is a complex gathering of information that often is marred with biases. Often the practitioners have little say in how they are remembered. This project is unique in that the artist is present. The Heather Cornell Legacy Project is multifaceted and international. Cornell has been a prominent figure since the tap renaissance. Her music/tap company, Manhattan Tap, led the global scene in the 80's and 90's. Next was an international solo career, fueled by her commitment to reconnect music and dance in North American culture. Cornell is one of the last living links to the original vaudeville tap masters and has the unique job of passing down this African American oral tradition. The Legacy Project is striving to preserve her work, searching for new ways to nurture the way forward. This project has three goals: 1) To digitize and organize Cornell's personal archives, which, though vast, represent a small fraction of her entire body of work. 2) To use these archives in concert with Cornell to educate the next generations of tap practitioners in the studio and on stage. 3) To disseminate the work through redefining tap pedagogy, rebalancing music, dance and theater and creating opportunities for intergenerational encounters through performance.
As Professor Cornell's intern, I began the digitization of her archives, including several forms of media: video, audio, and paper. I have also developed presentations to educate the community about the time sensitive nature of this work. Lastly, i have a created an original database to organize over 400 media forms that aligns with library standards in the US, facilitating usage by libraries and other sources, providing unique access to the work.

Schultz, Elizabeth

Institution: *GA - Georgia College and State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Elizabeth Schultz *Shay Silvia* *Dawson Robinson*

Abstract Name: **Reflections on Past and Present Coping Strategies for COVID-19 Related Stress and the Impact on Mental Well-Being: A Pilot Study in College Students**

The ongoing COVID-19 pandemic has left both physical and psychological scars. According to the CDC (2022), in 2021, 37% of high school students reported experiencing a decline in mental health during the pandemic. Many of these students are now enrolled in college, where we are seeing similar trends in increasing mental health concerns resulting from the pandemic (Ochnik et al., 2021). Social isolation, financial concerns, fear of loved ones or themselves getting sick, and food insecurity are some explanations for these trends (Knolle et al., 2021). At present, we are grappling with the long-term effects of the pandemic and processing what we have witnessed and experienced. We are interested in addressing two broad research questions: 1) How have college students been coping with COVID-19 related stress both in the past and presently and 2) What is the impact of different coping strategies on mental health during the COVID-19 pandemic? We are asking college students to reflect on the coping strategies they used to cope with COVID-19 related stress in the past, defined as from March 2020 to July 2022, as well as what strategies they are currently using, defined as from August 2022 to the present. We are using the 28-item Brief COPE scale, which contains fourteen different subscales, each measuring different coping strategies. We are grouping these items into two categories, adaptive and maladaptive strategies, for the purpose of analyses. We are measuring emotional, social, and psychological mental well-being using the Mental Health Continuum Short-Form. We predict that students who use more adaptive coping strategies, both in the past and present, will demonstrate higher mental well-being than students who use more maladaptive coping strategies. Our research is an important piece for building a better understanding of the impact of the pandemic on mental health in vulnerable populations.

Schultz, Madison

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Olivia Felix,
Carrie Andersen,
Mitch Comerford,
Karissa Dachel,
Adam LeCleir,
Madison Schultz

Abstract Name: **Political Divide**

The current political climate in teh US is more than contentious. The current state of the us verses them attitude divided along the political lines is ever worsening. What information is fact and what is political rhetoric? How can the divide be bridged? What are the potential dangers of such a divide in a powerful country? This research is designed to study how the political attitudes across the US are shaped by unfriendly dialog and news media bias. The goal is to understand how the varying forces around the political disconnect predict the perspective of adults in the US. This research will focus on political knowledge, willingness to connect with people of differing views, commitment to current political views, and news seeking behaviors when identifying underlying reasons for the unwillingeness to accept others with different viewpoints and what can be done to mediate the negative behaviors creating an even wider divide between the groups. How does having friends with widely different political views impact inter-political discourse? What communication skill sets can be cultivated to foster necessary listening and dialogue techniques? Data analysis will be completed in the spring semester of 2023.

Schulz, Sable

Institution: *SD - University of South Dakota*

Discipline: Chemistry/Materials Science

Author/Contributors:
Sable Schulz

Abstract Name: **Hydrogen atom transfer and oxygen activation in polyoxometalate-alkoxide clusters**

Mixed-valent hexanuclearpolyoxovanadate-alkoxide clusters have emerged as stable hexavanadate alternatives with surface bridging alkoxide ligands. These species have a vast variety of applications in redox catalysis since they can function as redox reservoirs in multi-electron processes due to the VV/VIV redox couple. Their redox properties can be further expanded and tuned through the incorporation of multiple first row transition metal centers. Recently, a[(VIIIVV5-nVIVnO5)(O)(OCH3)12](4-n)+ cluster with a “vacant” metal cation embedded within the vanadium oxide cluster was identified, in which the vacancy can be filled by either water or oxygen molecules. Herein we present a computational study on the aqueous and non-aqueous hydrogen atom transfer and molecular oxygen activation catalyzed bypolyoxovanadate-alkoxides with differing redox states. The bond dissociation Gibbs free energy (BDFE) was used to evaluate the O-H bond weakening and the possibility of thermal H2formation. Finally, spin density distribution was used to identify the oxidation states of the various mixed valent species. Due to the nature of these vanadates, as well as the possibilities held within, the calculations have been repeated with differing metal centers from a similar family, those being Iron and Colbalt.

Schumacher, Elaine

Institution: ***WI - St. Norbert College***

Discipline: Biology

Author/Contributors:
Elaine Schumacher,
Ryan King

Abstract Name: Characterization of Stem Cell Regeneration in Schmidtea mediterranea

Animals rely on stem cells to repair tissue damage following disease or injury. In order to study stem cells, Schmidtea mediterranea is used as a model organism because of their unique ability to completely regenerate lost tissues through the use of stem cells. Previous studies have focused on how stem cells proliferate in response to injuries with large tissue losses where many cell types need to be regenerated at once. However, in the case of many human injuries or diseases, only one specific cell type is lost. This project aims to characterize how stem cells respond following destruction of specific cell types, particularly if the injury response mechanism is a general proliferative response or a specialized mechanism depending on the cell type lost. Work up to this point has allowed for destruction of pigment cells via light-induced pigment cell loss. This has allowed for measurement of mitotic index following destruction of pigment cells as compared to large tissue loss injuries. Collected data suggests that destruction of a particular cell type causes an increase in general proliferative responses. Additionally, measurement of pigment cells in an organism has been done using a riboprobe to detect the PBGD1 gene found in pigment cells using in situ hybridization. Preliminary data of the amount of pigment cells present following light-induced loss of pigment cells and large tissue losses suggest that stem cells send out a general proliferative response with many specific cell types in response to injury, rather than sending out only the specific cell types needed. Continued research will give insight about the molecular mechanisms behind regeneration following injury or disease involving specific cell types.

Schumacher, Michael

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Business

Author/Contributors:
Michael Schumacher

Abstract Name: Occupational Stress and Job Satisfaction: Differences among Racial/Ethical and Immigration groups

ProblemThe overarching goal of this study is to build a further understanding of the factors contributing to Long-Term Care Worker's (LTCW) job satisfaction by examining the association between occupational stress and job satisfaction, and the differences among racial/ethnic and immigration groups.MethodologyIn this study we utilized the National Nursing Assistant Survey (NNAS). First, means/standard deviations or percentages of all study variables were generated to describe the study sample. Second, bivariate analyses, including analysis of variance and Chi-square tests, were conducted to compare job satisfaction, job resources, and job demands among racial/ethnical groups and different immigration groups. Finally, a series of binary logistic regression models were conducted to examine the associations between occupational stress and job satisfaction, and such associations within different racial/ethnical or immigration subgroups.ResultsFindings indicate that White nursing assistants (NAs) are the least likely to be satisfied at work compared to other race groups and Resident/Alien workers have a higher likelihood of reporting higher job satisfaction. Among all racial/ethnic groups, there was a relationship between organizational resources and personal development. With respect to Naturalized NAs and White NAs benefits were crucial. For Hispanic NAs, job satisfaction was significantly correlated with high resident respect. Black, Hispanic, Naturalized NAs, and Resident/Alien NAs were less satisfied with high physical demands. Emotional demands were high for Black and Hispanic NAs, along with Resident/Alien NAs.ConclusionRegardless of race/ethnicity or immigration status, Nursing assistants have low-status employment, coupled with poor work conditions, challenging job tasks and low wages. Tailoring existing workplace environments to promote job resources among LTCW is a practical way to reduce the negative and costly consequences of occupational stress within the workplace

Schuster, Cristian

Institution: *NY - SUNY Buffalo State College*

Discipline: Political Science

Author/Contributors:
Cristian Schuster

Abstract Name: **Effects of Foreign Imposed Regime vs Internal Imposed Regime Change on Its Populace**

Are international interventions that impose regime change effective in promoting human development in post-conflict societies? While existing literature has explored how foreign interventions shape conflict dynamics and duration, there is limited research on the effects of international interventions on human development after a regime change has occurred and conflict has ended. This study seeks to address this gap in the literature by examining the impact of 'foreign-imposed regime change' (FIRC) interventions and 'internally imposed regime change' (IIRC) on human development post-conflict. Specifically, I argue that although foreign interventions that seek regime change may have positive effects on creating stable conditions during conflict, their effects on human development post-conflict do vary. State-building structures and service institutions created during foreign interventions are viewed by local populations as illegitimate and therefore, are more likely to collapse post-conflict. In countries where regime change has occurred as a result of domestic processes, institutions created to improve human development are more likely to be supported by the domestic population and thus, remain stable after conflict has ended. Using data on education, equality, and income from the United Nations' Human Development Index to measure human development, I will estimate a statistical analysis to test the relationship between FIRC and IIRC regime change and human development for all post-civil war countries during the period of 1990-2009. I anticipate my findings to show that interventions that impose external regime change are ineffective in improving human development in post-conflict states. Additionally, I expect that post-conflict countries that have experienced internal regime change are more likely to exhibit higher levels of human development. In addition to making theoretical and empirical contributions to the literature on regime change and providing suggestions for future research, this study offers policy relevant insight into the consequences of foreign policy decisions on governance and development.

Schutte, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Education

Author/Contributors:
Grace Schutte,
Scout McKnight,
Kate Hinnant,
Helena Sumbulla

Abstract Name: **You?re Reading What, Now? The History of Book Banning in the U.S. and Its Societal Consequences**

Book banning is on the rise in the United States, with bands of parents and political groups protesting the exclusion of titles in classrooms. Parents are concerned about what their children are reading in school, at what age, and in what way—School Board meetings, as a result, have become literary bloodbaths. Our purpose is to understand what has brought on this latest surge of challenges; what the societal consequences of banning books in the U.S. may be; and, to create an applicable curriculum on Book Banning for classrooms. To gain a better understanding, we went to the texts themselves: By reading under-fire titles, we learned the arguments against them and discussed their controversies with students through our Subversive Book Club. Through our research and discussions, we found that books detailing the experiences of POC and LGBTQIA+ individuals, social issues, and historical events have been targeted most in recent years; however, the claims against them focus on explicit content and strong language. We believe this to be a way for parents and organized political groups to remove books that do not align with their ideological ideals or make them feel uncomfortable. But, this raises the questions of censorship and what we are "allowed" to teach students. Should we take additional measures to ensure their comfort at the expense of accuracy and truth? In the curriculum we are designing, we broach these questions as well as provide thorough background information on a number of banned and challenged books, along with companion discussion questions created to get students thinking more proactively about what they are reading. This work is significant because words have power, as do the stories we tell—to censor and remove them and their lessons are to withhold the most authentic education we can offer.

Schwartz, Samuel

Institution: *IA - Iowa State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Samuel Schwartz,
Jeremy Rurup,
Ethan Secor

Abstract Name: **Oblique surfaces impact on aerosol jet printed line resolution**

Aerosol jet printing (AJP) has emerged as a valuable resource for its additive manufacturing abilities in printed circuits for electronics. AJP utilizes micron-size droplets to deposit electrically conductive materials onto a variety of surfaces and can create feature sizes on the order of 10-100um. The deposited inks are sintered creating a lightweight and precise electronic system. This process may be utilized in industries from aerospace to biomechanics. The research presented looks into how surface angle may affect line resolution (line width) and along with that, the conductivity of the final print as line resolution may affect conductivity. Unique among printed electronics techniques, AJP is well-suited to conformal printing on complex 3D surfaces due to its high standoff distance of 1-5mm. The work will explore the deposition physics of conformal printing, both surface normal and oblique. Process studies were performed employing both a traditional 3-axis aerosol jet printer, and a custom aerosol jet printer on a 6-axis robot arm enabling direct comparison between oblique and surface normal prints on non-horizontal substrates. Varying ink compositions were used to explore the relationship between droplet size and dispersion. Additionally, CFD modeling was used to simulate prints on angled surfaces.We found that with higher angles, the less resolution of printed lines. Additionally, one 45-degree sample was notably less conductive than expected which implies a decrease in impaction efficiency when the droplet sizes get too small. The results show the value of printhead position in relation to the print surface. The enhanced resolution from prints normal to the surface demonstrates the value of printing normally to a surface. For advanced non-planar surfaces, a machine that can maintain a printhead normal to the surface will help ensure accurate line resolution. Machines that utilize XYZ motion will have to account for angle variability to maintain precise resolution.

Schwarz, Sophia

Institution: *AR - John Brown University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Sophia Schwarz

Abstract Name: **The Spiritual Realm in Hinduism in South India as Understood Through Localized Practices Connected to Western Christian Beliefs**

To enhance understanding and constructive conversation between individuals with a perspective of the spiritual realm from the idealogy of Hinduism in South India and Western Christianity, ideas about the spiritual realm in Hindu beliefs in South India were explored and connected to Christian ideologies. A Hindu conceptualization of the spiritual realm was explored through localized examples of worship and spiritual possession to understand the way religion is practiced and what that reveals about the beliefs of its adherents. Ultimately, understanding a perspective of the spiritual realm and spiritual possession is helpful for Christians to better understand how the spiritual realm fits with their idealogy and to strengthen constructive communication between Christians and Hindus. From a few localized examples of spiritual practice that were studied and informed by universal Hindu literature, the significance of the spiritual realm to Hinduism was revealed. Additionally, the manifestation of the spiritual through the manifestation of deities was understood as a significant component of Hindu worship. It was discovered that physical elements are used in connecting to the spiritual, at least in some cases of worship, and that a deity's presence is important in worship. Ultimately, there was a connection from the research between how Hindus understand spiritual possession and how it is related to Christan beliefs. Additionally, the Christian message is a spiritual message and communicates that when someone believes in Christ, the Holy Spirit dwells in them. This message requires some conceptualization of the spiritual realm. When Christian beliefs are shared with Hindus, components of Christian belief can be connected to frameworks that Hindus already hold. In this sense, understanding the shared frameworks between these religions can better inform communication between the two religions and challenge their beliefs from the differences in the other idealogy.

Scott, Abigail

Institution: ***NE - Creighton University***

Discipline: Communication/Journalism

Author/Contributors:
Abigail Scott

Abstract Name: Boys to Men: How Communication Forms Understanding and Talk about the Modern Feminist Movement

Using the method of grounded theory, I explored how young adult cis-gender men talk about, understand, and interpret the modern feminist movement. More specifically, I analyzed how young cis-gender men interpret and talk to each other about the modern feminist movement, as well as the messages they received growing up regarding the movement. I interviewed cis-gender men aged 19-24 (n=19) about their experiences growing up, along with how they talk about the movement today. I produced themes by using Owen's (1984) articulation of thematic analysis via recurrence, repetition, and forcefulness. Seven themes surrounding communication regarding the feminist movement emerged: "passive" feminist, role in conversation, everyone treated equal, strong female figures, limited power, women are powerful, and rare conversation. The findings demonstrated that men are hesitant to participate in the feminist movement despite identifying themselves as feminist. Findings show young cis-gender men feel as if there is a "box" they must fit into. Instead, they rarely choose to engage in conversations on the topics of feminism with their peer groups. They also believe that women's voices matter more concerning women's rights. In addition, young cis-gender men have received messages about women and women's rights through the female figures in their life. These findings suggest that men don't see a specific place in which they can speak on women's rights and when pushed to talk about women's rights they lean on close friends to provide that space. These findings also convey the impact of female figures onyoung men's viewpoints regarding women and women's rights . We can use this information to encourage young cis-gender men to speak up and engage in the feminist movement. Engaging young men in the conversation about equal rights benefits everyone.

Scott, Rosslyn

Institution: ***PA - University of Pittsburgh***

Discipline: Nursing/Health Science

Author/Contributors:
Chelsea Chao *Young Ji Lee* *Rosslyn Scott*

Abstract Name: A scoping review on the association between long-term exposure to ultraviolet radiation and the risk of developing ovarian cancer

Introduction: There is a strong association in developing external cancers (e.g., skin cancer) due to excess exposure to ultraviolet (UV) light. However, there is limited research on the harmful effect of UV rays on ovarian cancer (OvCa), the deadliest gynecological cancer. Understanding the effect of UV rays may guide us in changing lifestyles to reduce the incidence rates of OvCa. The purpose of this review is to understand the association between long-term exposure to UV radiation and the risk of developing OvCa.Methods: We conducted a review using the following keywords: "ovarian cancer" AND "UV radiation" in PubMed. We excluded articles that did not investigate the direct correlation between UV light and the risk of developing OvCa (Figure 1). Population, study location, UV light exposure time, health outcomes, and confounding variables were extracted from the included articles. The second author (RS) confirmed the review process and results after the first author completed the review.Results: Eleven studies were included in this review. All studies showed an inverse correlation between UV rays and risk of developing OvCa. Eight articles had confounding variables related to the environment such as places of residence, air quality, and seasons. Seven articles presented dietary differences related to OvCa prevention: supplements (e.g., vitamin D), fruit, and vegetables. Five studies included ethnicity and/or racial information. Other cancers were also identified in all studies except one: colon, breast, prostate, bladder, endometrial, esophageal, gastric, pancreatic, rectal, renal, vulvar, Hodgkin's, and non-Hodgkin's.Conclusion: We found several factors involved in OvCa in addition to UV rays, such as vitamin D. Further studies may need to focus on specific confounding factors. Also, many confounding variables were unmodifiable and unavoidable. Future studies are needed to examine management strategies of non-modifiable factors in our daily lives.

Seats, Hannah

Institution: *AR - Arkansas State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Hannah Seats

Abstract Name: **Waxworm Larvae as a Potential Plastic Waste Management Solution for Long-Term Space Travel**

Plastic waste accumulation on Earth is an immediate and growing environmental challenge with similar implications for long-distance space travel. Current methods of waste disposal in space require jettison for incineration into Earth's atmosphere or costly shipment back to Earth. More sustainable plastic waste alternatives are needed as astronauts travel further into space and reach thinner atmospheric planetary bodies. Galleria mellonella larva, known as the waxworm, may be a possible plastic waste management solution in space. The waxworm has the unique ability to biodegrade low-density polyethylene plastics (LDPE) into ethylene glycol, a more useful byproduct, through its salivary enzymes and gut microbiome. Funded by the NASA SPOCS (Student Payload Opportunity with Citizen Science) program, an experiment run on the International Space Station (ISS) in July 2022 tested if waxworms were capable of biodegrading plastic in microgravity. Our interdisciplinary team of biologists and engineers (A-State), along with K-12 citizen science partners (CS) from local middle schools, designed a fully automated experimental module and collaboratively generated data establishing the experimental parameters to sustain waxworm biodegradation for three weeks on the ISS. These preliminary experiments defined optimal larval size (40-45 mg), a simplified diet (beeswax), and plastic (Ziploc freezer bag) to augment plastic biodegradation in microgravity. Onboard the ISS, waxworm survival and plastic consumption were confirmed through inflight imaging. Post-flight data collection shows plastic mass reduction in microgravity is not statistically different from plastic-fed Earth controls. Waxworm larvae and their excreta were preserved to enable future gut microbiome analysis and ethylene glycol detection (signature terminal product of LDPE breakdown) respectively to better understand the microgravity impact on plastic biodegradation by waxworms. This first successful ISS study with waxworms may lead to more sustainable methods of plastic waste management not only on Earth, but also for long-term space travel to the Moon or Mars.

Seber, Katelin

Institution: *PA - Lafayette College*

Discipline: Political Science

Author/Contributors:
Katelin Seber

Abstract Name: **An Analysis of the Effects of Globalisation on Far-Right Nationalist Ideology in Belgium**

From Donald Trump's victory in 2016 to Brexit to most recently Giorgia Meloni's victory in Italy, we are seeing a surge in the popularity of far-right ideology all across the West. Many scholars cite this as an effect of globalised capitalism and the subsequent economic, political, and social changes it has brought to many Western nations. While internationally, globalisation has helped reduce income equality between richer and poorer nations, domestically it has been detrimental to largely uneducated and unskilled workers in rich countries. The resentments and anxieties spawned by these economic disruptions have generated significant support for far right, ethnonationalist identity politics. Furthermore, globalisation has resulted in the large-scale immigration into both the United States and Western Europe. The subsequent population changes have given rise to what is known as the "Great Replacement Theory", where white majority populations believe that liberal elites are intentionally replacing them with the incoming migrants. This notion has been exploited by leaders of emerging nationalist and far right movements, who themselves have benefitted handsomely from early globalisation. Though many argue that the reawakening of far right ideologies is closely linked to the emergence of a globalist world order, this connection is one with many loose ends. By examining classic cases such as the United States and Britain – and comparing them to Belgium, an outlier of this popular theory – it becomes clear that globalisation by itself is not enough to account for this phenomenon. In Belgium, despite economic and social effects of globalisation being more prevalent in the region of Wallonia, far-right ideology is much more popular in the neighbouring region of Flanders. This project thus seeks to explore the different cultural and political factors that drive populations affected by globalisation to support alt-right ideologies.

Secaida Del Cid, Lucia

Institution: ***PA - Duquesne University***

Discipline: **Engineering/Applied Sciences**

Author/Contributors:

Lucia Secaida Del Cid	*Benjamin Bernarding*	*Madison Burchfield*
Brian Toma	*Anita Saraf*	*Bin Yang*

Abstract Name: **Developing a 3D Printed Microscope for Imaging Cardiomyocytes in a Cell Culture Incubator**

Understanding the behavior and response of cardiomyocytes under external loading provides critical information for studying certain congenital heart diseases. An inflation chamber (bioreactor) is often used to introduce controlled stress and strain to cells. Continuous imaging of cells seeded in a bioreactor has proven to be challenging due to the lack of compatible microscopes. Our study aimed to fill the gap by developing a compact microscope using 3D printing technology and inexpensive electronic parts that met the following two requirements: 1) compatibility with a cell culture incubator and a bioreactor, and 2) capability of imaging cardiomyocytes under different testing conditions. The 3D printed microscope that we developed features adjustable focusing via a tunable lens, a programmable LED array for flexible illumination, and a long working distance compatible with the bioreactor. A Raspberry Pi single-board computer was used to control focusing, illumination, and image acquisition. The microscope is capable of performing bright-field, dark-field, and polarized light microscopy. These capabilities allowed us to acquire comprehensive information from the cells. Considering its working environment, the microscope was designed to be moisture resistant. We developed an intuitive GUI that allowed users to preview images in real-time and fully control the microscope with minimal training.
With the microscope, we quantified its imaging performance using a USAF 1951 resolution target and tested it on cardiomyocytes. We achieved a magnification of 10x and a spatial resolution of 228 line-pairs/mm, sufficient for imaging cardiomyocytes. Beating cardiomyocytes can be clearly visualized under the microscope and polarized light provided additional contrast. Our initial results suggest that the compact microscope is compatible with a bioreactor and cell culture incubator to study cell's responses to mechanical loading.

Sedarski, Josh

Institution: ***MN - Hamline University***

Discipline: **Physics/Astronomy**

Author/Contributors:
Josh Sedarski

Abstract Name: **Increasing Conductivity in Gallium Nitride Nanocrystal Films**

As demand increases for renewable energy, it becomes especially important to develop alternative materials that will produce high-efficiency energy devices. The semiconductor gallium nitride (GaN) may be one of those materials for dye-sensitized solar cells. As such, this work attempted to synthesize GaN nanocrystal thin films with desirable electrical properties—specifically high conductivity. To achieve this, the power supplied to the reactor was varied during GaN plasma synthesis in order to induce nitrogen vacancies in the crystal lattice. These vacancies are believed to contribute to the free electron concentration of GaN. The plasma power varied from the standard 80 W down to 60 W and 40 W. The resulting GaN powder—normally colorless—became more yellowwith decreasing plasma power, indicative of defects. However, electrical conductivities were similar to that of the control sample, which implies that the desired defects (nitrogen vacancies) were not induced. Near-infrared absorption spectra did not reveal carrier absorption features due to free electrons, suggesting a low free electron concentration. This further supports a lack of nitrogen vacancies. Analysis of transmission electron microscope images eliminates amorphous crystal structure and unreacted Ga metal nanocrystals as the source of the induced defects. These results demonstrate that varied plasma power does not produce high conductivities in GaN nanocrystal thin films. Possible next steps include varying the amount of nitrogen during synthesis and doping with Si (via silane gas) or Zn metal to increase the free electron concentration of the films.

Sedlacek, Makenzie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Makenzie Sedlacek,
Jackson White

Abstract Name: **Geology of the Proposed Dreamer Segment of the Ice Age National Scenic Trail, Rusk County, Wisconsin**

The Ice Age National Scenic Trail (IAT) showcases Pleistocene glacial features in the State of Wisconsin. The Ice Age Trail Alliance has proposed a new Dreamer Segment trail to focus on landforms in the Blue Hills region of western Wisconsin. The Alliance commissioned a study the geomorphology of the proposed trail segment to create publication-quality materials (both text and figures) for a future interpretive guide. GIS analyses and field work have been used to study the proposed Dreamer Segment and the surrounding region. Published papers about the glacial geomorphology of the area were read. LiDAR-based shaded DEMs were used to evaluate glacial landforms in the region and determine potential interpretive stops. This was followed by five days of field work to determine the best locations for potential interpretive sites. Multiple geomorphic features are proposed as interpretive stops along the Dreamer Segment. Glacial landforms of the Chippewa Moraine are well represented, including kettles, hummocks, and ice-walled-lake plains. Precambrian Barron Quartzite is exposed in Gundy's Canyon. The most unique feature is the Blue Hills Felsenmeer State Natural Area. During the late Chippewa Phase of the late Wisconsin Glaciation, meltwater from the ice margin eroded a westward-dipping, subaerial "box canyon". Frost shattering and rock falls produced the angular "sea of rocks" of the Blue Hills Felsenmeer. The final product of this research will be interpretive text, publication-quality figures, and a research poster to be donated to the Alliance and the National Park Service.

Seefeldt, Megan

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Biology

Author/Contributors:
Jeryn Daggs *Megan Seefeldt* *Tabitha Sikora*
Davis Lesperance *Douglas Brusich* *Jeryn Daggs*

Abstract Name: **Determination of the role of nucleoskeletal factors on mortality and seizures following traumatic brain injury (TBI)**

Traumatic brain injury (TBI) is a global public health issue affecting millions of individuals each year. One complication stemming from TBI is the occurrence of post-traumatic seizures (PTS), which affect up to 50% of individuals. Severe TBI, advanced age, and genetics are all associated with increased rates of PTS. However, these factors are poorly understood and the cellular and molecular mechanisms which initiate, drive, and maintain a PTS disease state are not known. These gaps in understanding hinder our ability to treat those suffering from PTS and prevent its development. Recurrent or lifelong PTS is associated with sustained changes in nervous system activity. Gene expression and nervous system activity are highly regulated processes. Central to gene expression are nuclear lamin proteins and associated binding partners. Interaction partners include the Linker of Nucleoskeleton and Cytoskeleton (LINC) complex which serves as a mechanical stress apparatus bridging cytoplasmic and nuclear functions. Lamins and the LINC complex are excellent candidates for factors which span contributions to aging, TBI outcomes, and PTS. We utilized the GAL4/UAS system in Drosophila melanogaster to drive RNAi-mediated knockdown of candidate genes. We specifically targeted the LINC complex factors consisting of fly Msp300, klarischt, klaroid, as well as the two fly lamins. Young flies were administered TBI via either a single, severe injury paradigm or a repetitive, moderate injury paradigm. Animals were then assessed for overall mortality, and also PTS via a simple behavioral assay. We found little evidence that genetic knockdown of candidate factors affected outcomes. Future directions include assessment of aged flies to understand if these factors are similarly negligible with advancing age.

Seger, Carolyn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Allison Bast,
Carolyn Seger

Abstract Name: A Spatial Analysis of Cellular Signal Strength in Western Wisconsin

Across the United States, rural areas have lower levels of education, higher unemployment, and fewer economic opportunities compared to urban areas (Singh; Siahpush 2014). Rural residents have lower levels of access to health care and health services, and health insurance coverage rates are lower as well; as a result, the health of rural residents is poorer compared to their urban counterparts (Laditka et al. 2009).For Wisconsin, the disparities between urban and rural populations are stark. National estimates identify about 20 percent of the U.S. population as rural; in Wisconsin that number is even greater at 26 percent. The lack of healthcare providers, longer distances to healthcare, and lower economic status for rural populations places extra burdens for both providers and patients to meet and receive needed care. Telehealth, through synchronous and asynchronous remote appointments, provides health care providers opportunities to connect with patients outside of physical office visits, especially in rural areas. Coverage maps provided by major carriers are overall generalized, therefore the use of direct telehealth options using video cannot be properly assessed. This study will focus on measuring cellular telephone strength in rural areas through the direct collection of cellular phone strength for both AT&T and Verizon phones. Data will be used to interpolate strength for areas not along roads and a probability map will be generated using a Kriging method. Resulting maps will aid health care providers with more specific information to best provide patients the best possible telehealth option.

Sell, Rachel

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassandra Giwojna,
Rebekah Fetting

Abstract Name: Animals' Impact on Stress

The majority of today's students are stressed in some way, and research suggests that animals are a good way to manage stress levels. With anxiety and depression on the rise, programs are seeking support for students in the stress-filled school life. Some researchers have found that bringing in therapy animals has been a good way to lift the spirits of the students. Animals have been used in therapy as early as the 18th century (Chu et al., 2009) and have been shown to ease isolation. Over 98% of full-time students are stressed, and 86% of students find improvement in domestic animals. Animal-assisted programs are still being researched, but evidence shows that there is a positive influence towards stress in many students. This research attempts to disclose the relationship between pet interaction and the level of stress the person feels. The results show that a majority of students have reduced stress after interacting with a domestic animal.

Selvaraj, Sanjana

Institution: *CA - Aspiring Scholars Directed Research Program*

Discipline: **Biology**

Author/Contributors:
Madison Dee,
Sofia Penttila,
Sreenidhi Challagundla,
Sanjana Selvaraj

Abstract Name: **The In-silico and In-vitro Characterization of Epigenetic Drugs (BET Protein Inhibitors and Related BET Pathway Targets) on a Colorectal Cancer Cell Line**

Bromodomain and extra-terminal domain (BET) proteins have been linked to increases in oncogene expression and tumor progression in a wide array of cancers. Previous research on BET proteins has demonstrated that BET inhibitors (BETi) and other drugs in combination can moderately reduce cancer cell proliferation in colorectal cancer. Limited treatments exist for colorectal cancer due to its malignant nature and existing treatments are often costly or ineffective. Our research centers around determining potential BETi in colorectal cancer through in-silico research and testing identified drug candidates in an in-vitro setting. While previous research has been conducted on BETi, few studies examine the effects of BETi in colorectal cancer. So far, we have created a list of one hundred possible BETi drugs. By utilizing a deep learning Cancer Drug Response (Deep CDR) prediction algorithm, we will further narrow down our list of potential drug candidates. We are also working on identifying additional targets in HCT116 cells that are related to the BET protein pathway to expand our research. In order to do this, we are analyzing gene expression datasets using R and ranking candidates related to the BET protein pathway. Once the in-silico analysis is complete, the drugs will be ordered/synthesized and tested on HCT116 colorectal cancer cells. They will be tested through MTT Assays, Western Blot and qPCR and the ones with the most BETi properties as well as the least harmful side effects will be selected. With more BETis available, we hope to increase the number of cancer treatment options for patients.

Sengsaisouk, Souksakhone

Institution: *IA - Luther College*

Discipline: **Nursing/Health Science**

Author/Contributors:
Souksakhone Sengsaisouk

Abstract Name: **Understanding Undergraduate Student Nurse Stress**

Background: In the results of a recent Iowa Nursing Demand Survey (2021), 71.6% of respondents said the nursing shortage in Iowa was either " Extreme" or "Great." Nursing students are prone to chronic stress, leading to attrition and contributing to the nursing shortage. Determining the extent of the stress in nursing programs is an important step in considering interventions to develop to impact the nursing shortage.Purpose: The purpose of this descriptive study was to explore the overall stress and stress per program level within undergraduate nursing students. Nursing programs can then use this information to consider opportunities to decrease student stress and attrition.Methodology: The Perceived Stress Scale - 14 was distributed to each undergraduate nursing cohort annually for a period of 4 years at a small, private liberal arts nursing program in NE Iowa. Students received a link to the survey via email from the nursing faculty. The Qualtrics online survey software was used to collect responses. SPSS software and Python Code were used to analyze data. The theoretical framework used in this study is the Lazarus Theory of Stress. Results: According to the data analysis, sophomore-level nursing students have the highest level of stress, but not significantly. All cohorts experience the same range of chronic stress as well as an equal possibility to have associated problems such as anxiety and other health issues. The literature informs us that nursing students' susceptibility to stress is due to both external factors such as clinicals, academic pressure, social life and intrinsic factors, like ability to cope. Conclusion: Information from the research can aid nursing programs in developing methods to assess their student stress and help to create programming to mitigate it. This will influence the attrition rate of students leaving nursing programs, which impacts nurse staffing levels.

Senthil Murugan, Dhivyashree

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Dhivyashree Senthil Murugan

Abstract Name: The Effect of Indomethacin on the Cytotoxicity of Phenylboronic Acid Nitrogen Mustards in Triple Negative Breast Cancer

Triple Negative Breast Cancer (TNBC) lacks hormonal receptors such as progesterone, estrogen receptors, and human epidermal growth factor (HER2 protein). TNBC is unaffected by hormonal treatments that target these three growth factors. After diagnosis, there is less time to treat TNBC than other breast cancers. Therefore, there is an urgent need for a better understanding of TNBC and development of better treatment options. Our previous study showed that the phenylboronic acid nitrogen mustard prodrug, FAN-NM-CH3 is effective in reducing tumor sizes without obvious toxicity due to the prodrug's enhanced activity in the presence of hydrogen peroxide (H2O2). This prodrug is initially inactive but can be converted into an active species upon metabolism in cancer cells with high level of H2O2. Many TNBC cells are under oxidative stress and produce high levels of reactive oxygen species (ROS), such as H2O2 that can act as a target for developing cancer-specific therapy for TNBC treatment. However, many challenges exist to the development of targeted cancer therapy based on a single agent, including tumor ROS heterogeneity, targeted delivery, selective activation, and therapeutic durability. We propose that these issues can be resolved by combining ROS-activated prodrugs with the agents that can create H2O2 selectively in cancer cells. Indomethacin is a ROS generating NSAID (non-steroidal anti-inflammatory drug), which can produce ROS selectively in cancer cells. Thus, we expect that combination of indomethacin and ROS-activated prodrugs can enhance the anticancer efficacy and selectivity, therefore reducing the effective drug doses, minimizing off target effects. Lower dose of prodrug would minimize adverse effects from the chemotherapy. My work is focusing on investigation of the cytotoxicity of indomethacin and its combination with FAN-NM-CH3 in TNBC cells and its correlation with ROS levels.

Senti, Evan

Institution: ***IL - Trinity Christian College***

Discipline: Biology

Author/Contributors:
Julia Oostema,
Evan Senti,
Clayton Carlson

Abstract Name: Characterization of Antibiotic Resistant Providencia alcalifaciens: From Ecology to Genomics

Antibiotic resistance is a growing problem in environments around the world, but resistance rates tend to be greater near human populations. One such area is the Navajo Creek, a suburban waterway near southwest Chicago that flows through neighborhoods and forest preserves. Among bacteria isolated from the creek, resistance to six different antibiotics has been discovered, and metagenomic analysis of these populations shows diversity among the microbes. Water samples collected from suburban waterways over the course of several months indicate that Providencia alcalifaciens is widespread, both geographically and temporally. Whole-genome sequencing of P. alcalifaciens reveals a wide variety of resistance genes that allow it to survive in the presence of antibiotics, but the interplay between these genes and the corresponding antibiotics is still being determined. Bacteria are being grown in the presence of different antibiotics, and gene expression will be measured using qPCR. Growth assays are also being done to determine the bacteria's resistance in different concentrations of antibiotics. Overall, this project offers ecological and genomic analysis of a highly resistant microbe and potential pathogen that has been isolated from local waterways.

Sepiol, Madison

Institution: ***FL - Stetson University***

Discipline: International Studies

Author/Contributors:
Madison Sepiol

Abstract Name: Crafting the Truth Through News: Attitudes Toward the Russian Government, Nationalism, and Ukraine in Novaya Gazeta's Coverage of the 2014 Annexation of Crimea

Russia's annexation of Crimea in March 2014 was a moment in modern Russian history that consolidated narratives presented by media outlets in Russia while also dividing state and independent media further into an 'us' versus 'them' dichotomy. Utilizing Michel Foucault's concept of regimes of truth, in this paper I analyze the ways in which Novaya Gazeta, an independent Russian newspaper, crafts their own regime of truth that serves to oppose the nationalist, irredentist, and pro-state narratives found in the state media's framing of what truth is in Russian society. Additionally, I pair Foucault's ideas with the concepts of the "Russian World" and soft power as tools of analysis in exploring the modern landscape of Russian society, public opinion, and journalism.Novaya Gazeta, as an independent newspaper with a history of being targeted by the Russian government, is a particularly relevant media outlet to analyze in relation to their coverage of the annexation of Crimea as they express the full range of views that reject those presented in the state media's regime of truth. Their work in reporting on the annexation illustrates the limitations of journalism in a country with no freedom of the press and where self-censorship must exist as a protective measure against state violence. The Russian state simultaneously allows independent media such asNovaya Gazetato report on the annexation to create an illusion of democracy while also threatening its existence if it crosses the line of acceptable reporting. WhileNovaya Gazetais often bold in the language they use to oppose the regimeof truth crafted by the state media, its own regime of truth is limited in its ability to thoroughly report corruption and anti-state values due to the looming threat of coercion and violence on behalf of the state.

Serafina, Britney

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Britney Serafina

Abstract Name: Rare Bryophyte and Vascular Plant Survey: Diversity within the Devil?s Punchbowl, Dunn County, WI

The Devil's Punchbowl is a small preserve located in Dunn County along the Red Cedar River. It's most well-known for its unique waterfall and cliff geology. Rare plant surveys are important for the conservation of natural preserves like the Devil's Punchbowl, and for plant species conservation. These types of surveys help with research, monitoring, management, and citizen engagement.Since the Devil's Punchbowl is the most visited nature preserve in Dunn County, it is important to keep a record of the species present. To conduct this survey, Dr. Amanda Little and Idocumented vascular and bryophyte plant speciesweekly over the summer of 2022. We identified unknown specimens at the University of Wisconsin – Stout herbarium. Of the 206 vascular plant species found at the Devil's Punchbowl, about 78.6% are native and 13.1% are considered invasive. Notably, there were twelve different fern and three club moss species. Two of the clubmosses were regionally rare and county records but consisted only of a few individuals. The mean coefficient of conservatism (C of C) of the vascular species was 3.80 out of 10. We found a total of 9 different bryophyte communities within the Devil's Punchbowl with no rare mosses. However, the Devil's Punchbowl is a unique, small preserve with a high species density. There are many different natural communities, and the heterogeneity of the microhabitats creates high species richness. Despite the lack of rare species, the Devil's Punchbowl still provides valuable contributions to plant conservation in this heavily agricultural area of the state. Conservation actions like protecting the site from trampling and protecting fern and clubmoss areas are recommended.

Serger, Amanda

Institution: *FL - University of West Florida*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Amanda Serger

Abstract Name: Assistive Robotic Platform Design for Non?Urgent Household Tasks

Humans overcome minor household inconveniences daily without fully recognizing how challenging these tasks could be for individuals such as elderly people or people with disabilities. Those people often times struggle to complete tasks, for instance opening a door or reaching for an item, leading them to rely on caregivers for help. During the COVID-19 pandemic, this caregiver support becomes an unsafe and unreliable solution that can result in a greater risk, thus the need for another solution arises: robotic technology. Recent developments in the robotics field have paved the way for this research, aiming to design a home assistance robot with capabilities to complete the basic household tasks. The designed robotic platform features four mecanum wheels that support a platform base, a lift mechanism, and a robotic arm. The omni-directional movement of the wheels is controlled by four DC motors, which allow the robotic platform to navigate to its commanded location. Further, the lift mechanism is controlled by a stepper motor vertically to adjust the robotic arm based on the requested height. The six-link robotic arm is used for manipulation tasks. The designed robot has a central computer that utilizes MATLAB and Simulink for the developed algorithms. The designed robotic platform's capabilities include autonomous navigation, object fetching, as well as face detection to interact with users. With these capabilities, the robot can aid elderly and disabled individuals in need of home assistance. Ultimately, this unique platform can drastically improve conditions for those who cannot independently perform household tasks. These activities are part of a larger effort to establish custom robotic platforms for helping people with non-urgent tasks in household environments.

Serrano, Gabriel

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Gabriel Serrano

Abstract Name: An Emotional Support AI to Assist Mental Health Disorders

Every year more and more people are struggling to handle a wide variety of mental health disorders. However, as the number of people in need of assistance increases, the number of resources available to them has continued to decrease. The goal of this research is to develop an Emotional Support AI (ESAI) system, an additional resource for those unable to obtain the help and information they need. ESAI provides users with a friendly user interface from which they can discuss their mental health concerns. The user can choose whether to communicate through typing or through real-time speech recognition. The ESAI has been trained to classify text based on the Naive Bayes Classification model. The model was trained using hundreds of thousands of Reddit posts, that were collected using web scrapping, where users have discussed their experiences with mental health. ESAI works by hosting 'sessions', in which it will log communications between itself and the user to check for any potential flags that may indicate the user is experiencing symptoms of one or many mental health disorder(s). These sessions can be used by the user for venting or to seek information regarding a variety of mental health disorders. If the probability that the user is experiencing a mental health disorder is higher than a specific threshold, the user is provided with general resources and contacts regarding the specified disorder. The user will also be provided with a mental health evaluation report at the end of each session upon request. Currently, results show that ESAI can classify mental health disorders with seventy-percent accuracy.

Seth, Jennifer

Institution: ***IA - Iowa State University***

Discipline: Sociology

Author/Contributors:
Colton Poor *Jonah Gray* *Jeanetta Plotzke*
Jennifer Seth

Abstract Name: Student Perspectives on Sustainability at Iowa State University

Today's university students will face unprecedented environmental, economic, and societal sustainability challenges upon graduation. The Sustainability in Curriculum Change Project (SiC-CHANGE) employed focus groups and a student body survey to understand Iowa State University (ISU) students' perspectives on how well the curriculum and extracurricular activities are preparing them to address the various sustainability challenges that society faces. Although ISU has incorporated sustainability language into its strategic plans and actions over the years, we are not aware of any systematic efforts to assess the adequacy of the university's efforts to increase student knowledge and skills related to sustainability. This research project is a rigorous effort to learn from students about their interest in and their experiences with sustainability at ISU. Twenty-one students from select colleges participated in focus group discussions between October 2021 and December 2021, and 1,206 students responded to a web-based survey of juniors and seniors conducted between April 18 and May 16, 2022. Our sample represents all colleges offering undergraduate degree programs at Iowa State University. Most respondents placed high importance on addressing environmental, economic, and social sustainability outcomes articulated in the UN sustainable development goals. Students at Iowa State feel empowered to solve climate change issues in the future, but they want more courses that integrate sustainability into their curriculum. Additionally, students believe that public universities should be leaders in sustainability. Our results show that most students don't think Iowa State prioritizes sustainability in education or that they are leaders in sustainability. Survey and focus group participants suggested many ways that ISU could incorporate this topic into the ISU experience to better prepare students with the knowledge and skills needed to face present and future sustainability challenges.

Sethi, Rohan

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Biology

Author/Contributors:
Rohan Sethi *Sulivette Ramirez* *Angelica Cora*
Prachi Umbarkar *Sultan Tousif* *Hind Lal*

Abstract Name: Cardiomyocyte-specific Deletion of GSK-3? Promotes Ventricular Remodeling and Cardiac Dysfunction

Heart failure (HF) is a complex, major public health problem, so we wanted to investigate novel mechanisms that could lead to the identification of promising therapeutic targets to combat HF. Glycogen synthase kinase-3 (GSK-3) is a family of ubiquitously expressed serine-threonine kinases that consists of GSK-3α and GSK-3β isoforms. GSK-3α/β is critical to regulating many biological processes, including cardiac homeostasis. Previously, our research has identified cardiac fibroblast (FB) GSK-3β as a negative regulator of fibrotic remodeling in the ischemic heart. However, the role of cardiomyocytes GSK-3β (CM- GSK-3β) in the adult heart is not fully defined. To examine the role of CM- GSK-3β, we employed α-MHC promoter-driven, inducible CM-GSK-3β knockout (CM-GSK-3β-KO). At 10 weeks of age, mice were placed on a tamoxifen (TAM) chow diet for 15 days, followed by regular chow for an additional 30 days. After TAM protocol, echocardiography was conducted to assess cardiac function. Echocardiographic analysis suggested that CM-GSK-3β KO mice developed severe systolic dysfunction and dilative cardiac remodeling. Additionally, increased heart weight/tibia length ratio was observed in the CM-GSK-3β KO mice indicating adverse remodeling of the heart. Consistently, increased fibrosis in the KO heart was evident from Masson's trichrome staining. To further confirm CM-GSK-3β's role, we harvested the hearts at 45 days post-TAM diet and performed flow cytometric analysis. Consistent with the increased fibrosis, KO hearts demonstrated an increase in frequency of FBs, and COL1A1+ FBs. Furthermore, increased frequency of infiltrated CD45+ leukocytes and myeloid cell such as monocytes (CD45+CD11b+), macrophages (CD45+CD11b+F4/80+), neutrophils (CD45+CD11b+LY6G+), and dendritic cells (CD45+CD11C+) in KOs indicated the potential role of CM-GSK-3β in immune cells cross-talk. Our extensive flow cytometry analysis (IL-6+, IL-1β+ and TNF-α+ immune cells) suggested that CM-GSK-3β regulates pro-inflammatory subsets of immune cells in the heart. Overall, our finding reveals a critical role of CM-GSK-3β in maintaining cardiac homeostasis.

Sevcik, Stefanie

Institution: *GA - Georgia College and State University*

Discipline: **FAN Abstract**

Author/Contributors:
Stefanie Sevcik *Jordan Cofer* *Hasitha Mahabaduge*
Abigail Watkins *Lauren Trinkwalder*

Abstract Name: **Developing a Framework for Implementation and Assessment of Transformative Mentored Undergraduate Research and Creative Endeavors**

This panel will describe the development and application of a rubric focused on implementation of mentored undergraduate research projects by professors at a public liberal arts college, CUR 2020 AURA award winner, Georgia College; State University. Panelists will include the Associate Provost for Transformative Learning Experiences, the faculty chair of the rubric committee, and the Faculty Director for Mentored Undergraduate Research and Creative Endeavors (MURACE) who will share insights from the process of conceptualizing the framework through programmatic implementation of it through the Office of MURACE. Two students will also discuss the effectiveness of the framework from their experiences in a course that incorporated the framework into the syllabus through a Course-based Undergraduate Research Experience (CURE). The value in identifying a common framework and the experience of this application from multiple perspectives will be discussed along with tools for assessment at the course-level and at a larger-scale programmatic level.We will share the definition of mentored undergraduate research developed by faculty at Georgia College; State University along with criteria for measuring how transformative components of this definition are, in practice. The framework serves as an excellent starting point for faculty new to developing effective undergraduate research experiences in CUREs and in individual mentoring experiences. It provides concrete considerations for creating a highly-transformative mentored undergraduate research experience grounded in data and best practices. In this way, our rubric can enhance both faculty/staff new to mentored undergraduate research as well as providing ideas for continuous improvement for those who are experienced mentors.

Severson, Elizabeth

Institution: *IA - Iowa State University*

Discipline: **Biology**

Author/Contributors:
Elizabeth Severson,
Ajay Nair

Abstract Name: **Impact of Biostimulants on Seedling Growth and Development in Tomato Transplant Production**

Biostimulants are an up-and-coming product in the agricultural and horticultural industry used to increase the health and vigor of crops. More information is needed on biostimulant use and benefits as there is a lack of research-based information despite increased interest from growers. This study assessed four potential biostimulants from Roquette America® (Soluys 048P, Potato Soluble, Pea Soluble, and Nutralys H85) for application in tomato transplant production. These potential biostimulants and a synthetic fertilizer were tested at three different concentrations and compared to an untreated control. Experimental design was a randomized complete block design with three replications, with 75 total seedlings per treatment. Each treatment replication comprised of a 25 seedling block of 'Mountain Fresh Plus' tomatoes planted in a peat-based organic growing medium. Biostimulants were applied 3, 4, and 5 weeks after seeding. Seedlings were grown in the ISU Horticulture Greenhouses where temperatures were maintained at 60 °F at night and 70 °F during the day. High-pressure sodium lamps were used to maintain a photosynthetically active radiation of 250 µmol.m-2.s-1. Transplants treated with biostimulants outperformed untreated transplants in stem diameter, plant height, SPAD level, and dried biomass. Nutralys H85 and Solulys 048 showed promise to be potential substitutes for synthetic fertilizers, as the treated transplants were similar in stem diameter, plant height, and SPAD levels to those treated with synthetic fertilizers. Further in field and greenhouse testing of these biostimulants may provide clearer insight into the benefits of these biostimulants.

Severson, Nathaniel

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Ethan Olerich,
Matt Poppitz,
Sydney Schroeder,
Nathaniel Severson,
Madison Shepler,
Sudeep Bhattacharyay

Abstract Name: **Investigating the Folding of Intrinsically Disordered Cyclin-Dependent Kinase Inhibitor-Interacting Protein Using High-Performance Computational Simulations**

Cyclin-dependent kinase inhibitor 1-interacting protein 1 is involved in the cell cycle regulation via mediation of the G1 growth arrest pathway for DNA damage-induced repair checkpoints. They fall into the group of intrinsically disordered proteins, which do not require a complete globular structure to perform their function. The intrinsic disorders of the class of protein allow alterations of its topology while conserving binding sites. Due to the absence of reliable three-dimensional structure, the folding and the conformational dynamics have remained poorly understood. In particular, a comprehensive understanding of the relationship between protein folding and other biomolecular crowders is absent. Herein, we report a classical mechanical simulation-based study of the protein using various-sized crowders of the polymers of ethylene glycol. The protein 3D structure was downloaded using AlphaFold - the database created by artificial intelligence-aided protein structure solving. Five systems were constructed: one in only water, one in ethylene glycol, and three more in polyethylene glycols of various molecular weights (600, 10k, and 20 k). A 50 ns molecular dynamics simulation data was used for further analysis. The effect of these crowders on the folding dynamics and energetics was studied in detail using visualization, computational, and statistical tools. Results obtained from these studies will be presented.

Sexton, Hailey

Institution: *MN - St. Catherine University*

Discipline: Economics

Author/Contributors:
Mikaela Campbell,
Hailey Sexton

Abstract Name: **Welcoming the Dear Neighbor?**

From 2000-2018, white homeownership in Minnesota remained constant at 70%, while black homeownership saw a decline from 31% to 21% (Turtinene, 2021). Even before this decline, disparities between white and black homeownership were stark on account of discriminatory practices including racially restrictive covenants, clauses in housing deeds blocking BIPOC citizens from purchasing property. Using data from the Mapping Prejudice project that catalogs covenants in Hennepin and Ramsey county and historical data from the US census, we investigate the relationship between upward mobility and neighborhood shares of racial covenants by running regression analysis to check for correlation. Preliminary results show that neighborhoods with high concentrations of covenants have higher upward mobility for white children but not for black children. Covenants are associated with a widening opportunity gap long after they became legally unenforceable. This research informs policies that remedy longstanding disparities such as changing zoning restrictions or amending first-time homebuyer grants.Reference: https://bringmethenews.com/minnesota-lifestyle/twin-cities-has-worst-racial-homeownership- gap-in-the-us-report-finds Melissa Turtinen

Shaffer, Rachael

Institution: *PA - Moravian University*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Rachael Shaffer

Abstract Name: **Speech-Language Pathology and Music Therapy: An Exploration of Collaboration**

Speech-Language Pathologists (SLPs) often collaborate and co-treat withother health-care professionals. From the perspective of clinicians, this type of interprofessional practice (IPP) is thought to improve outcomes for the clients they serve (American Speech-Language-Hearing Association, n.d.). Less is known about IPP in relation to the fields that are not a part of the traditional allied health professions such as Music Therapy (MT). SLPs and MTs work collaboratively with clients across a variety of communication impairments (e.g., autism, aphasia), ages, and settings (Geist et al., 2008). There are, however, controversial aspects related tothis relationship related to topics such as billing and clinical responsibilities. Although these types of disagreements exist, SLPs and MTs still collaborate. Unfortunately, little literature is currently available about this collaboration. Because of the potential clinical benefits of this relationship, the goal of this project is too understand the perspectives and experiences of SLPs who have co-treated with MTs. During Summer 2022, a series of 11 semi-structured interviews with SLPs who have co-treated with MTs within the past 5 years was conducted.During these interviews, topics that were discussed included what the collaboration was like, how often this collaboration occurred, and if there were any conflicts during their experiences together. Transcripts of these interviews will be analyzed using Thematic Analysis which consists of several rounds of reviewing and coding the transcriptions (Braun; Clarke, 2006). The results will allow for identifying key components of this collaboration across various environments. These findings will also be discussed relative to clinical applications and implications for future collaborations between SLPs and MTs.

Shah, Aditya

Institution: *CA - California State University - Fullerton*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Lyba Batla,
Bryan Cortes,
Justin Bui,
Aditya Shah

Abstract Name: **Targeted Messaging about Food Storage in Social Media Posts**

Food waste is a major problem in the United States and around the globe. In the U.S alone, avoidable food waste exceeds 55 million metric tonnes per year, nearly 29% of annual production and it has been estimated that this waste produces life-cycle greenhouse gas emissions of at least 113 million metric tonnes of CO2 annually, equivalent to 2% of national emissions. Food waste by end consumers occurs for many reasons, including food being prepared and stored incorrectly, and misunderstandings of the “best by” date on foods. Food-related messaging is widespread on social media, with users posting comments and photographs of foods that they are preparing or enjoying. These messages are then viewed by millions of users. Targeted responses to such messages could correct some misconceptions and therefore reduce food waste. The main technical challenges for creating targeted messages are identifying food-related posts and automatically generating a relevant response. We have developed an approach that uses machine learning to identify if a social media post mentions specific foods. The approach is able to detect food entities in Twitter posts with a precision and recall of 0.8. This approach was also applied to identify foods in photographs posted on Instagram using object recognition in images algorithms. If a post is identified as likely to be about a specific food, a short message with information such as storing tips and methods to prepare that food is generated. We use the FoodKeeper dataset published by the U.S. Department of Agriculture which contains descriptions of foods and their storage methods to generate targeted responses. This approach could therefore be used as a tool for more targeted and real-time messaging of information related to food and potentially help reduce food waste by end consumers.

Shah, Niyomi

Institution: ***VA - Virginia Commonwealth University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Niyomi Shah

Abstract Name: Reducing Parkinsonian Gait Disturbances: The Impact of Yoga as a Type of Movement Therapy in African-American Males Aged 50 - 75 with Parkinson?s Disease

Older African-American males in the United States are increasingly affected with Parkinsonian Gait Disturbances, a cardinal symptom of Parkinson's Disease that causes slow shuffling steps and diminished arm swing and flexed posture. Although medicinal supplements and deep brain stimulation treatments have shown minimal improvement in gait issues, they generally tend to be ineffective and may lead to an increase of freezing gait -- brief, episodic marked reduction or progression of feet despite the intention to walk.Alternatively, a specific movement therapy may be able to address the lack of improvement of Pakinsonian Gait disturbances. A review of literature on movement therapy and neurology suggest that the timed intervention of yoga may be an auxiliary option for improving Parkinsonian Gait Disturbances in African-American male patients diagnosed with the condition. Studies on gait dynamics and functional improvements of yoga indicate that the combination of postures and breathing allows for an active-mind body component that increases awareness and proprioception and activates muscle spindles, leading to increased functional and decreased freezing gait responses. Based on the stated studies, this research proposes the consistent, weekly therapy of yoga. Yoga therapy may decrease a Parkinson's patient's gait disturbances on the basis that these individuals with hypokinesia and akinesia are susceptible to minimal changes because their bodies naturally follow the path of degradation. The correlation between yoga and Parkinsioan Gait Disturbances is a novel idea, and testing is needed to create further transparency in the biological and physiological impact of muscle spindles in relation to neurological signals.

Shah, Palak

Institution: ***IL - Northwestern University***

Discipline: Biology

Author/Contributors:
Palak Shah,
Rosemary Braun

Abstract Name: Modeling Individual Sleep Needs from Wearable-Device Data

An individual's natural sleep and wake cycle plays a critical role in nearly every aspectof their daily life. There are currently thought to be two processes that interact to regulate one's sleep/wake cycle: a sleep homeostat, which depends on the amount of time you have been awake; and the circadian rhythm, an internal 24-hour molecular clock present in nearly every cell of the body. Both processes differ between individuals, whether that's from a decision to pull an all-nighter one day or from a genetic inclination towards being an "early bird" or a "night owl". This project focuses on building a model that can predict how particular sleep disruptions impact an individual's sleep cycle, as well as their ability to recover from these disruptions. A "two-process" model with the capability to simulate a theoretical sleep-wake cycle with disruptions was built and is being tuned using actigraphy data. Actigraphy measures motion using a noninvasive accelerometer embedded into a wearable-device (e.g. FitBit), allowing for the study of sleep activity patterns in a real-world setting. The actigraphy data was collected from approximately 20,000 individuals, who reside in 121 different countries. Machine learning was used on synthetic data generated from the "two-process" model and on actigraphy data, to match the parameters in both. The algorithm was first trained and tested on the synthetic data, and our knowledge of the model was used to tune the algorithm. Then, this algorithm was applied to the actigraphy dataset to evaluate its prediction accuracy on real activity data. Our model has shown that recovery from sleep disruptions can be modeled mathematically, and can be individualized using actigraphy data. It will be useful to anyone experiencing sleep disruptions due to health, work, or family responsibilities, by providing information on how to get sufficient sleep regardless.

Shah, Samay

Institution: *FL - University of South Florida*

Discipline: Psychology/Neuroscience

Author/Contributors:
Samay Shah *Micah Johnson*

Abstract Name: **The Associations Between Prosocial Skills and Substance Use Severity in Justice-Involved Adolescents with a History of Depression and Anxiety**

Aims: Justice-involved adolescents (JIA) are more likely to have poor prosocial skills, worse substance use diagnoses, and a history of depression-anxiety. It's known that the presence of prosocial skills is a protective factor against substance use disorders and a history of depression-anxiety, but these relationships aren't established in a justice system context. Investigating whether the presence of prosocial skills protects JIA with a history of depression-anxiety against substance use severity is the first step to bridging this gap. The study hypothesizes JIA with a history of depression-anxiety that use prosocial skills willmore likely have lower substance use severity. Methods: The study examined cross-sectional data from the Florida Department of Juvenile Justice (FLDJJ), which comprised of 79,960 JIA that were assessed by the Positive Achievement Change Tool (PACT) between 2004-2015. Multivariable logistic regression analyses were used to examine the relationship between prosocial skills (no skills and uses skills) and substance use severity (DSM-IV-TR criteria: no diagnosis, substance abuse, and substance dependence) in JIA with a history of depression-anxiety. Controlled for race, age, gender, and income. Results: JIA with prosocial skills and a history of depression-anxiety had 1.38 (0.05) higher odds of being diagnosed with substance abuse and 1.77 (0.01) higher odds of being diagnosed with substance dependence than the odds of no diagnosis in JIA with prosocial skills and a history of depression-anxiety. JIA with a history of depression-anxiety that used prosocial skills had higher odds of a poor substance use diagnosis. Conclusion: The findings contradicted the hypothesis. Prosocial skills as a protective factor against substance use severity and history of depression-anxiety are likely untrue in a justice system context. Prosocial skills are integral to building quality relationships. These skills could indirectly provide easier access to substances in incarcerated facilities and contribute to higher rates of substance misuse.

Shah, Sumil

Institution: *GA - University of Georgia*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Khushi Patel *Sumil Shah* *Anushka Sarkar*
Walter Schmid

Abstract Name: **Developing Rho1 into a Reporter to Determine Yeast GGTase-I Specificity**

Protein prenylation is a post-translational modification (PTM) of "CaaX proteins" which regulates their localization and function. Prenylation occurs to proteins having a C-terminal sequence that consists of a Cysteine (C), two aliphatic amino acids (a), and one of several amino acids (X). CaaX proteins typically undergo a coupled 3-step PTM pathway involving initial lipidation with a C15 or C20 isoprenyl group on the Cysteine, followed by endoproteolytic removal of the 'aaX' sequence, and finally methylation of the isoprenyl-cysteine carboxyl group. The 3-step PTM is documented for many CaaX proteins although emerging evidence indicates that some CaaX proteins are only subject to the first isoprenylation step. Ydj1 is an example of a CaaX protein that only undergoes isoprenylation, and it has been adapted as a genetic reporter to assess the prenylation potential of all 8000 possible CXXX sequences. Published results indicate that Ydj1 prenylation mediated by farnesyl transferase (FTase), which adds a C15 farnesyl lipid, extends beyond the traditional CaaX motif.Likewise, preliminary evidence indicates that Ydj1 prenylation mediated by geranylgeranyl transferase-I (GGTase-I), which adds a C20 geranylgeranyl lipid, extends beyond the traditional CaaL/F motif. These results suggest that the prenyltransferases, FTase and GGTase-I, have broader specificity than previously considered. Reliance on the naturally farnesylated Ydj1 reporter limits interpretation of these results for GGTase-I. This study reports on a method for assessing GGTase-I specificity through the naturally geranylgeranylated Rho1 GTPase that is a more appropriate reporter for GGTase-I activity. The method uses the essential nature of Rho1 and genetic recombination to create and assess the function of a plasmid library of Rho1-Cxxx sequences for insight into GGTase-I specificity. This study will refine the breadth of potential targets of the CaaX PTM pathway and provide insight into the implications of using GGTase-I inhibitors as human therapeutics in a variety of disease states.

Shahout, Janna

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Janna Shahout,
Anisah Bagasra

Abstract Name: **Pathways to Seeking Mental Health Services Among Muslim Americans.**

What are the pathways that Muslim Americans have taken to utilize mental health services? What factors impact Muslim Americans' help-seeking behaviors? The research surrounding this topic found that acculturation to Muslim versus American values affected the likelihood of Muslim Americans reaching out to mental health services (Haque et al., 2019). The research demonstrates how Muslims who are less likely to seek help found services like group therapy, therapists of similar/same background, and therapy through imams and/or mosques the most approachable (McLaughlin, Ahmad,; Weisman de Mamani, 2022). The major gap in the literature is the lack of research on the populations that have successfully sought out mental health services and the pathways in which they did so. This study aims to fill that gap in the literature. The data will be collected using a survey distributed through Qualtrics online. Muslim Americans who are 18 years or older and have used some form of mental health services are our target audience and will be recruited through digital and print flyers and social media. The study's expected findings will be that those of the younger generations and those who are more acculturated will have utilized mental health services more than those of the older generation who are not as acculturated. Expected findings also see religiosity impacting the individual's likelihood of using mental health services. The survey will be distributed and data collection will occur in the winter 2022-2023. The data will then be analyzed in early Spring of 2023.

Shaikh, Nabeel

Institution: *CA - University of California - Riverside*

Discipline: Biology

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Manal Hussein,
Wendy Saltzman

Abstract Name: **Changes in Parental Responsiveness across the Reproductive Cycle in the Biparental California Mouse**

In mammals, maternal behavior is activated by hormonal changes occurring during pregnancy and lactation. Females typically become highly attracted to infants at the end of pregnancy, whereas attraction to infants can wane across the lactational period. In many rodents, however, females gestate and lactate concurrently; it is not clear how maternal responsiveness changes in these species. Moreover, very little is known about fathers' responses to infants across their mates' reproductive cycle. We characterized the parental behavior of mothers and fathers across overlapping gestation and lactation periods in the monogamous, biparental California mouse (Peromyscus californicus), in which females are usually both pregnant and lactating and fathers perform comparable amounts of offspring care as mothers. Each parent was introduced to a young, unrelated pup for 10 minutes at four different time points across pregnancy/lactation, and behavior was compared across time points and between the sexes. Behavioral responses to pups did not change significantly across time points in either sex. At all four time points, however, fathers spent significantly more time than mothers performing parental behavior (i.e., licking, grooming, and huddling) toward the stimulus pup. These findings suggest that concurrent lactation might inhibit the rise in maternal responsiveness that would otherwise occur during late pregnancy, and that parental responsiveness toward infants is higher in breeding males than females in this biparental species.

Shalaby, Zeina

Institution: *EGY - The American University in Cairo*

Discipline: Economics

Author/Contributors:
Zeina Shalaby

Abstract Name: **Grameen Method of Microfinance as a Poverty-Alleviation Tool: Short and Long Term Effects on Women's Empowerment in Egypt**

Many people suffer from poverty globally, and economic tools used to combat it have varied from one country to another with some enacting noticeable change. The topic of micro-credit attracted attention after the Grameen Bank's microfinance method was recognized for decreasing poverty in rural Bangladesh by granting loans to women almost exclusively. This paper explores the application of the Grameen method of microfinance in Egypt. This is a review of the Grameen method, women's poverty as a universal issue and its significance, the specific conditions surrounding women's poverty in Egypt, and the economic and social outcomes of past Grameen microfinance efforts in Egypt. Research findings indicate that the Grameen method of microfinance successfully improved the economic status of Egyptian women. However, women from remote areas face obstacles in accessing and making use of these microloans. While the method had some favorable social outcomes by helping women build networks that provide support, it was proven to hold patriarchal structures in place by confining women to informal, domestic-managed work instead of challenging them. Further research is needed to research ways to improve women's access to microfinance in rural areas and to maintain the economic improvement guaranteed by the method while also challenging social norms hindering women's empowerment goals.KeywordsWomen'sEmpowerment; Poverty; Banking; Microfinance.

Shank, Lilianna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
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Terri Nordin *Chloe Hendrrickson* *Claire Hoge*
Sasha Pankratz *Tommy Atwood* *Alyssa Horton*

Abstract Name: **Feasibility of Virtual Exercise Intervention on Occupational Fatigue, Perceived Burnout, and Daily Sleep Time among Family Medicine Residents**

Background/Purpose: A career in medicine is a job of demanding hours by sacrificing one's own needs, causing an increase in mental fatigue and burnout syndrome. The purpose of the study was to examine the impact of a short-term tailored virtual exercise intervention on occupation-related fatigue, perceived burnout levels, and daily sleep time among family medicine residents. Methods: Thirteen participants were recruited and were asked complete two questionnaires related to occupational fatigue and perceived burnout level after which they were asked to wear three monitoring devices (thigh, hip, and wrist) for 14 consecutive days (one-week overnight shifts and another week of non-overnight shifts). Based on the feedback gained during a virtual interview with each participant on current exercisehabits and perceived exercise barriers, a three-week tailored exercise program was developed, and videoclips demonstrating the exercises were prerecorded. During the second and third weeks of the intervention period, participants were asked to wear the three devices. Post-intervention questionnaires on fatigue and burnout were completed. Paired samples t-tests were employed to examine the changes in outcome variables from baseline to during intervention. Results: One participant withdrew from the study due to injury; therefore, 12 participants were included in the analyses. As a result of the three-week intervention, chronic fatigue significantly decreased from baseline to during intervention (.05).Acute fatigue and intershift recovery slightly improved from baseline to intervention but did not show a statistically significant difference. No significant changes were seen in three subscales of the burnout inventory. Dailysleep time was also higher during day shifts than at night shifts for baseline and intervention periods (.05). Conclusion: Longer intervention period with a larger sample size is warranted to explore the effectiveness of the virtual exercise program on family medicine residents' perceived burnout, sleep patterns, sedentary behavior, and physical activity levels.

Shanley, Brigid

Institution: ***CA - California State University - Long Beach***

Discipline: English/Linguistics

Author/Contributors:
Brigid Shanley

Abstract Name: Annotating Archival Recordings of Hoc?k

Hocąk (also known as Ho-Chunk or Winnebago) is an endangered Siouan language from the upper Midwest region of the United States. This project involves digital annotation of recordings of Hocąk made in the 1970s. Each sound in each Hocąk word is segmented based on spectrograms generated by the speech analysis software Praat. This is part of the first project to research the acoustic measurements of Hocąk phonetics, begun around 2010; previously, researchers have used their hearing instead of scientific measurements. This research will make phonetic data of the Hocąk language more accessible to researchers, facilitating future research on this endangered language. It can be used to compare historic sounds to modern equivalents and to further research into Hocąk's history.

Shannon, Somer

Institution: ***AR - Arkansas State University***

Discipline: Communication/Journalism

Author/Contributors:
Somer Shannon

Abstract Name: Inclusivity and Accessibility in the Arkansas Coalition Against Sexual Assault

Research shows that women who have experienced sexual violence experience less distress when they have access to a sexual violence advocate compared to when they do not. Further, research shows that marginalized groups are routinely underserved by formal sexual assault support systems as they face unique barriers such as lack of accessibility. This makes the work that the Arkansas Coalition Against Sexual Assault (ACASA) does very important. To determine how the Coalition can better serve its communities, this paper used a qualitative content analysis and an intersectionality framework to analyze the inclusivity and accessibility of the organization's communication materials, website, and social media pages. The findings showed that ACASA makes intentional efforts to be inclusive, accessible and supportive of marginalized communities. For instance, their brochures include translations for Spanish speakers and their website makes good use of descriptive links, which is especially helpful for visually impaired users who use their screen readers to scan for links. Some of the rhetoric in their communication materials, however, promotes negative stereotypes about individuals with disabilities. One example pertains to their brochure on sexual assault of people with developmental disabilities, which concludes with the quote "My ability is stronger than my disability." I argue that this quote frames disability as a weakness or obstacle, rather than as a difference that ought to be embraced. Also, videos on their social media pages do not have subtitles or any kind of closed caption option. This makes the videos harder to understand for the deaf and hard of hearing, as well as for non-English speakers who may be reliant on subtitles in their language. This paper provides recommendations for how the organization can improve problematic rhetoric in its communication materials and make its community and social media presence more inclusive and accessible.

Sharafkhodjaeva, Amal

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Education**

Author/Contributors:
Amal Sharafkhodjaeva

Abstract Name: **Intercultural Competence of undergraduate students at American Transnational University in Uzbekistan**

Intercultural competence (IC) is the ability to function effectively across cultures, to think and act appropriately, and to communicate and work with people from various cultural backgrounds. Because of historical and recent events, Uzbekistan has a range of citizens from different nationalities. Uzbekistan is now welcoming more newcomers from Russia, Ukraine, Belarus, Kyrgyzstan, and more. Consequently, professionals are expected to be knowledgeable about various ethnic groups, to experience relationships with others, and to prepare for life in a multicultural society.This investigation examines the IC of undergraduate students in the Education Studies Program courses at a University in Tashkent. The investigator hypothesized that the students would be polarized in their orientation toward persons of cultures different than theirs. The research methodology is based on twenty current students who completed the Intercultural Development Inventory (IDI). Data analysis provided a 'snapshot' of their IC at this point.The findings suggest that Uzbek students have little life experience beyond their own home cultures. The University students do have a clear sense of their own values and practices, as well as a desire to preserve their own traditions. They see other persons as "others" without much definition or understanding.An undergraduate university program may promote IC skills to faculty as well as to students. University faculty may want to revise and rebuild the curriculum and policies in order to intentionally incorporate teaching and learning strategies to foster IC among their students. Additional research is needed in order to understand the IC development of undergraduate students in other settings, such as large public universities (e.g., the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers).

Sharma, Ankita

Institution: *NY - Brooklyn College*

Discipline: **Sociology**

Author/Contributors:
Ankita Sharma

Abstract Name: **Allocating Blame within Corporations through the Mind-Body Problem**

Allocating blame and the desire for someone to be punished for their actions are parts of human nature. But while someone may want to blame a finance company for a financial crisis, it is harder to assign responsibility to a corporation containing many people with varying specialized roles. My project explores how individuals allocate blame across organizations and how viewing responsibility through the "Mind-Body Problem" influences this blame attribution. Much like blaming a single person, which is easier than blaming an organization, the Mind-Body Problem allows the hierarchical structure found in organizations to be a single entity. As a CEO is at the top of the hierarchical structure of their organization, they would be the "mind" that controls their "body," or their subordinates. People would blame the "mind" the most for an event, while implementers of orders are not as blamed because they are not as pivotal and are mechanical. To test this, participants will read scenarios where a corporation's CEO decided with intent and asked their subordinates to implement their decision. Most mayblamethe boss for an event because their role is more pivotal and because they give out orders with intention. Because subordinates can be substituted and the outcome of an event is not affected by their participationspecifically, they maynot be as blamed. However, participants may blame subordinates when they act outside of the orders of their boss, though still not to the same extent as the CEO. These anticipatedfindings suggest that the mental state of an agent is important and that people rely on the fact that the "mind" controls the"body" when assigning blame.Surveyswill be conducted to gauge how participants interpretthe pivotality, intention level, and moral responsibility of multiple agents acrossscenarios demonstrating unique, fictionalizedethical failures within organizations.

Shaver, Dalton

Institution: *GA - Kennesaw State University*

Discipline: International Studies

Author/Contributors:
Dalton Shaver

Abstract Name: **OPERATION ENDURING FREEDOM: Improving Mission Effectiveness by Identifying Trends in Successful Terrorism**

This research examines how the characteristics of terrorist attacks predict the chance of an attack succeeding, where an attack is defined as successful if the intended attack type is carried out. Data from The Global Terrorism Database was analyzed across three geographical missions within Operation Enduring Freedom: Trans-Sahara, Horn of Africa, and the Philippines. The three models were able to distinguish between successful and unsuccessful attacks at 78.74%, 82.11%, 74.25%, respectively. Using predicted probabilities of success obtained from each logistic regression model, the medians were plotted to compare the characteristics of terrorist attacks across missions. The coefficients for each model were analyzed to compare the odds of success for each variable level to the odds of success of the reference level for that variable. The coordinates for successful and unsuccessful attacks as classified by the dataset were plotted to explore spatial patterns in regional maps. Many insights were gathered through analyzing Operation Enduring Freedom missions. For all three Operation Enduring Freedom missions, attacks involving Barricade Incidents, Unarmed Assaults, Infrastructure Attacks, and Incendiary weapons are predicted to have the highest probability of success. Additionally, the two most prevalent regional ethnic groups in the Trans-Sahara and Horn of Africa have higher predicted probabilities compared to jihadist organizations, in contrast to the Philippines, where attacks by Islamic Extremists have the highest probability of succeeding. Furthermore, attacks targeting private citizens, tourists, non-governmental organizations, and food or water supply, have the largest probability of success for the Trans-Sahara and Horn of Africa regions, whereas suicide attacks in the Philippines raise the chance of success. By determining the specific characteristics of attacks that produce the highest probabilities of success, the effectiveness of Operation Enduring Freedom can be improved by focusing counter-terrorism training and operations on the features that predict successful attacks.

Shaw, Jessica

Institution: *MD - Bowie State University*

Discipline: Biology

Author/Contributors:
Jessica Shaw,
Treeana Jordan,
Tia Harris,
Kyle Pias,
Dr. Anne Wiley

Abstract Name: **Dietary preferences of invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge, Maryland**

Invasive species are a leading cause of environmental degradation in freshwater ecosystems. Invasive crayfish, for example, can displace native crayfish and consume large quantities of both aquatic macrophytes and native animals. While Maryland is home to three invasive species of crayfish, relatively little is known about their impacts to local food webs. Here, we collected invasive red swamp crayfish (Procambarus clarkia) from the Patuxent Research Refuge in Laurel, Maryland and performed a feeding experiment to understand their dietary preferences and likely influence on refuge food webs. Crayfish were housed in 20 x 12 x 10-inch glass tanks equipped with air stones and polyvinyl chloride pipes for refuge. They were offered native plants and animal matter in three separate week-long trials, and their diet preferences were quantified based on the percent of food mass remaining at the end of a trial. We also used the stable carbon and nitrogen isotopic composition of wild red swamp crayfish to understand how their dietary niche compares with that of a common, native omnivore, the eastern painted turtle (Chrysemmys picta picta). Our feeding experiment showed that on average, red swamp crayfish preferred smartweed (Persicaria sp.) over other species of aquatic plants and animal matter over native plants. We also documented substantial variation among individual crayfish – a finding echoed in wild crayfish's variable nitrogen isotope values. Finally, we observed considerable overlap between the red swamp crayfish's isotopic niche and that of the eastern painted turtle. These results provide insight into the impact of an invasive species within one of the largest green spaces in the Washington, D.C.-Baltimore corridor.

Sheehan, Martin

Institution: ***IL - Trinity Christian College***

Discipline: **Physics/Astronomy**

Author/Contributors:
Martin Sheehan,
Heng-Yu Chen

Abstract Name: **Influence of Dark Matter Particles During Interstellar Travel**

This paper examines the interactions between the scalar dark matter particles X and baryonic particles within the human body when a human is approaching near-light speeds. A scalar dark matter model in which X couples to photons only via loops is used to calculate the scattering amplitude between nucleons N and X. An approximation of the human body as nucleons is made to determine the luminosity. We consider all the possible interaction channels via elastic scattering. With the constraints from current dark matter data, we found the scattering amplitude of the channel XN→XN via the Higgs using the benchmark point of mx=100 GeV to be 9.9x10^47 cm^2. This value is close to the upper limit of 2018 Xenon1T and at the same order of magnitude.

Sheetz, Colton

Institution: ***GA - Kennesaw State University***

Discipline: **Kinesiology/Physical & Occupational Therapy**

Author/Contributors:
Britton Rellinger *Colton Sheetz* *Jacob Fanno*
Christopher Staples *Gerald Mangine*

Abstract Name: **Acute Effect of a Pre-Workout Supplement on Power Expression and CrossFit? Workout Performance**

A common CrossFit® (CF) workout structure is to have trainees complete the same circuit of exercises for 'as many repetitions as possible' (AMRAP) within a given duration. Performance is dependent on sustaining the power needed to complete each movement at a pace that also minimizes breaks due to fatigue. This ability is known to improve with training and CF experience. However, several individual nutritional ingredients are known to impact energy availability and/or assist with fatigue management, and these may collectively be found in a variety of pre-workout formulations. Thus, supplementing with a pre-workout formulation may provide a greater benefit to AMRAP performance than training and experience alone, but no study has investigated the acute effects of such formulations in experienced CF trainees. Therefore, the purpose of this study is to examine the acute effects of a pre-workout supplement on power expression and CF workout performance. Healthy, CF experienced (≥2 years) men (ages 18-45) are being recruited for this cross-over design, placebo-controlled study. After providing their written informed consent, participants must complete four, weekly experimental visits at approximately the same time of day in randomized order. Upon arrival, they are asked to consume either a pre-workout supplement (S) containing ingredients known to improve energy availability and manage fatigue, or non-caloric placebo (P). Then, they rest 40 minutes before completing either a 5- or 15-minute AMRAP of 9-calorie rowing, six 95-lbs. barbell thrusters, and three 24-in box jumps. Power expression will be measured during each set of rowing via the ergometer's microcomputer, and during each thruster (by PERCH; a barbell tracking camera) and box jump (by in-ground force plates) repetition, and these will be averaged across each round.Comparisons will be made between S and P, 5- and 15-minute trials, and their combinations on changes in power expression across each round completed.

Shehata, Maya

Institution: ***EGY - The American University in Cairo***

Discipline: Psychology/Neuroscience

Author/Contributors:
Maya Shehata,
Mariam Alaa,
Dana Wasfy,
Kene Uwajeh

Abstract Name: Conformity and Friendship Satisfaction Among University Students

The rhetoric around one's role in a friendship or relationship is largely shaping up to promote a lack of conformity. Adolescents and young adults are now regularly told to "stand out" and perhaps that fitting in isn't always the best option. This, however, prompts the question of what role conformity plays in impacting friendship satisfaction. This paper explores whether there's a correlation between an individual's level of conformity and their level of friendship satisfaction. Gender and relationship status are explored as potential mediators in this relationship. The participants' level of conformity was measured using the Elevator experiment, where participants enter an elevator and find 4 other people facing the rear end of the elevator. Participants accordingly make one of three decisions, they either turn and face the rear end (conformity), continue standing the same way (non-conformity), or hesitate (mid-level conformity). Participants then completed a questionnaire that assesses their level of platonic friendship satisfaction across three scales. This process was completed 75 times by participants, with 25 students conforming, 25 not conforming, and 25 mid. Results of the Anova show that there is no significant correlation between conformity and friendship satisfaction; however, there was a significant correlation between gender and friendship satisfaction, which indicated that girls are overall more content with their friendships. This opens lots of areas for future research, as it can be worthwhile to explore some of the other factors that result in girls being more satisfied with their friendships at this specific age.

Shen, Justin

Institution: ***CA - University of the Pacific***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:

Justin Shen	*Holly Jiang*	*Sabrina Ton*
Polina Eidelberg	*Molikca Kas*	*Landy Gu*
Vanessa Rangel	*Nghia Tran*	*Liang Xue*

Abstract Name: Investigation of the thermal stabilization of triplex DNA by flavonoids

Triplex DNA consists of a third strand, referred to as a triplex-forming oligonucleotide (TFO), binding to the double helix of DNA in the major groove via Hoogsteen H-bonding. The formation of triplex DNA follows specific base pairing rules. The binding of TFO to duplex DNA can interfere with the nucleic acid processing proteins binding to the same region and consequently regulate DNA replication and transcription. It has been recognized as a promising approach in anti-gene therapy. However, the downside is that triplex-DNA has a slower formation rate than its duplex counterpart. They are also known for being relatively unstable due to charge repulsion between three DNA backbones. Nonetheless, the stability of triplex-DNA can be enhanced by small molecules, which specifically bind to the DNA triplex and increase its stability. Our lab recently discovered that certain flavonoids exhibit a stabilizing effect on triplex DNA but minimal impact on duplex DNA. Such a phenomenon is pH-dependent. Flavonoids are natural products that can be found in fruits, vegetables, grains, etc., and have shown anti-oxidative, anti-inflammatory, and anti-carcinogenic properties. In the present work, we have carried out a full-scale study on the thermal stabilization of triplex DNA by commercially available flavonoids at different pHs monitored by UV. The effect of structure on the stabilization of triplex DNA will be discussed.

Sheppard, Sarah

Institution: *CAN - Vancouver Island University*

Discipline: Public Health

Author/Contributors:
Sarah Sheppard *Kaylie Curtis* *Marni Brown*
Lola Raymond-Bhatt

Abstract Name: **Preparedness and Comfort Levels in Providing Sexual Health Education on Vancouver Island**

Sex trafficking and sexualized violence are increasing in communities across British Columbia (BC). Sexual health education has been recognized as a powerful tool to prevent children and youth from experiencing these devastating forms of abuse. The question then becomes: who is providing this sexual health education to British Columbian youth, and how well is it being provided? While parents and private consultants often play a role in teaching children the basic concepts involved in sexual health education, the quality and scope of their explanations can vary widely. As such, a key source of sexual health education is teachers in primary and secondary schools. Typically, sexual health education in BC begins in kindergarten and spans through grade ten. While the topic's content is regulated through the provincial curriculum, previous research has shown that teachers are not providing consistent and thorough education. The disconnect between the curriculum and educators appears to be hinged upon two concepts: first, educators themselves do not have enough knowledge on the topics to teach them effectively, and second, educators may not feel comfortable with certain sensitive topics within the curriculum. This project sought to investigate how prepared Vancouver Island teachers-in-training are to teach sexual health education based on their knowledge and comfort levels regarding the curriculum topics. A survey was created with three sections: individual demographics, a curriculum-based knowledge test, and a subjective section focusing on comfort levels regarding various sexual health topics. The survey was open to university students enrolled in the Bachelor and Master of Education programs at Vancouver Island University and the University of Victoria. By examining these future teachers, this project aimed to illuminate how prepared the next generation of teachers are and provide insight into the future of sexual health education.

Sherman, Daniel

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Daniel Sherman,
Lauren Haefs,
Patrick Blaufuss

Abstract Name: **Determination of optimal feeding rates for juvenile Walleye (Sander vitreus) in tank-cultured systems based on growth performance**

Walleye (Sander vitreus) are a highly sought-after northern Midwest fish species known for their nutritional quality and recreational attributes; however, the population has been decreasing with the ever-changing climate of our lakes. The objective of this study is to determine feeding rates for walleye juveniles and provide baseline information on feed management for walleye aquaculture. We conducted three two-week trials in indoor systems run with flow through water at 18 to 20°C. Walleye were fed with a commercial diet at 6 different feeding rates (% initial body weight daily) ranging from 5.0 to 17.5 % in Trial 1, and 2.5 to 15% in Trial 2, with 30 fish per tank. In Trial 3, walleye werefed at 5 different feeding rates from 2.0 to 8.0 body weight daily with 15 fish per tank. The initial body weight was 0.95 g, 2.31, and 9.3 g for Trial 1, 2 and 3, respectively. Optimal feeding was estimated using polynomial regression method based on the percentage of weight gain during 2-week feeding. Our results showed that an optimal feeding rate was 22%, 12.5%, and 7.7% for fish ranging from 1-3 g, 2-5 g, and 9-17 g, respectively. The survival was significantly impaired (0.05) when walleye were fed at 5% body weight daily in Trial 1. Trial 2 and 3 showed minimal mortality impact based on diet. Condition factor, expressed as the ratio of body weight and the cube of length, was significantly lower for underfed fish compared to those fed at their optimal feeding rates or higher. The nutritional composition of walleye and feed is pending for analysis and will be available for the presentation. The result of this study will provide preliminary information for developing feed management of walleye culture and designing future studies on nutritional requirement.

Shi, Wei

Institution: ***WI - University of Wisconsin-Stout***

Discipline: FAN Abstract

Author/Contributors:
Wei Shi *Jason Liu* *Cassandra Hoxie*
Giaolong Nguyen

Abstract Name: Integrating Undergraduate Research into Electrical Engineering Curriculum

Research and creativity are critical in the profile of a new engineer. One of our goals in engineering education is to have students experience design, creativity, and innovation. Thus, an exploratory innovation to integrate undergraduate research into electrical engineering curriculum is being conducted, which leads to an active learning for Computer and Electrical Engineering students at University of Wisconsin-Stout. Student research projects with state-of-the-art technologies are applied in engineering courses for embedding high-quality undergraduate research into teaching. The objectives of integrating undergraduate research into electrical and computer engineering curriculum include applying research skills and methodology on collaborative and industrial-relevant projects, teaching students all aspects of design of automatic control system and robotics, expanding knowledge base of new technology, and preparing future engineers to face real-world problems. The development of student research projects, such as robotics system design and intelligent control system design, is based on the application of hands-on instruments and software. Students are provided with research examples to teach them from the component level research to a complete functional system design. This research design process is prevalent in industry, which will be beneficial for students to practice and experience the design and research processes. It has been shown that the integration of undergraduate research into engineering curriculum has a great impact on motivating students in engineering and technology research, participating faculty-student scholarship activities, pursuing advanced graduate study in engineering, and embracing their responsibilities in active learning in engineering. Students are provided with more opportunities to work with their peers, faculty, and industry in research. Furthermore, students' skills with hardware and software, comprehensive application and hands-on abilities, and creativity can be better cultivated.

Shibi, Siddhartha

Institution: ***CA - San Jose State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Syed Kazmi *Vaishali Jha* *Siddhartha Shibi*
Syed Kazmi

Abstract Name: Machine Learning to Develop Models for Analyzing Stress in an Academic Environment

This paper demonstrates the significance of readily available machine learning (ML) platforms like IBM Watson machine where the user can develop ML models to analyze the data and predict the outcome with high accuracy by using various algorithms. This platform provides a great opportunity to new users with limited computing and/or data analysis experience to run a machine learning problem. This is achieved by offering the user an option of automated selection of various algorithms and other relevant parameters (hyper parameter values) under both supervised and unsupervised learning. In the current work, we are analyzing the data collected from an academic institution in Pakistan to evaluate the impact of various parameters on students' average grades by developing ML models on Watson platform. The data was collected right after the COVID peak by distributing a questionnaire among students. The aim was to obtain information on various relevant parameters that were grouped in four sections as "General Information", "Perceived Stress Scale", "Cognitive Assessment", and "Social Dependency". Watson ML platform was used to develop a model under "supervised learning" option and by incorporating various algorithms including Extra Trees Classifier and Random Forest Classifier. The machine proposed two best performing pipelines corresponding to Random Forest Classifier that gave an accuracy of 66.4% (Cross-Validation) in which feature enhancements were performed including hyper parameter Optimization and feature engineering. The paper includes details on various aspects of using ML Watson-platform and the outcome of the ML-model for the analysis of the current data. Results shows that among all impacting parameters, cognitive performance, self-study hours, and number of class absentees played a dominant role in predicting the student's average score. This presentation will describe the questionnaire, statistics, and ML models employed to conduct the study. Suggestions to improve the model's accuracy will also be discussed.

Shibu, Navaneeth

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Navaneeth Shibu,
Shrey Pradeep,
Mike Sloane

Abstract Name: When is race a useful variable in research?

The use of race or ethnicity as a variable in social science and biomedical science research has had a long and tortured history. The history of social science research is replete with studies examining race as a variable. The issue of race and IQ is a notorious example where research has been co-opted to support racial stereotypes, structural racism, and policies driven by majority groups. Genetic and biomedical research have not been immune from similar abuses and misuses. Given more advanced understanding of the complexity of social issues that include disparities and injustices as well as advances in personalized genomic medicine it is useful to pause to examine under what circumstances should race or ethnicity be included as a variable in modern scientific research. Given the preponderance of biased media, increased levels of intolerance and racial bigotry, and the polarization of attitudes on most issues related to inequalities and disparities, one has to ask what are the responsibilities of researchers to incorporate race or ethnicity as a variable and what additional constraints might they consider in how such information is reported? The implications for using race or ethnicity in the social and behavioral sciences will be compared to the implications for its use in biomedical sciences and health-related research.

Shibuya, Sarah

Institution: ***IN - Rose-Hulman Institute of Technology***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sarah Shibuya *Zhenjiang Zhang* *Jenna Dombroski*
Michael King

Abstract Name: Selective Functionalization of Leukocyte Subpopulations with E-Selectin Liposomes

Metastasis occurs when cells break off a primary tumor and enter the blood stream. This process can create secondary tumors at distant sites. To combat metastasis, an antimetastatic therapy uses the protein TNF-related apoptosis inducing ligand (TRAIL) to initiate apoptosis in circulating tumor cells (CTCs) in the blood stream. Liposomes with the protein E-Selectin (ES) attach to leukocytes in the bloodstream and are used as vessels to transport TRAIL to CTCs. Here, we investigate the influence that ES has on the binding of liposomes to subpopulations of leukocytes, specifically monocytes and granulocytes. Through flow cytometry analysis of monocytes and granulocytes from healthy patient blood, the concentrations of fluorescent ES-liposomes bound to the surface of these cells were investigated. It was found that as the average number of ES per liposome increases, the greater occurrence that liposomes are bound to granulocytes. The number of ES yields no correlation on the effect of liposome-monocyte binding. The influence of the liposome component DSPE-PEG was also investigated. When DSPE-PEG was removed from the liposome fabrication process, a specific subpopulation of higher fluorescence in flow cytometry measurements indicated more efficient binding to granulocytes. Imaging using fluorescence microscopy visually confirmed the binding of liposomes without DSPE-PEG to leukocytes using a DiI lipid dye and DAPI nuclei dye. A population of granulocytes did not bind to these liposomes, while most were bound to them in abundance, indicating there may be selective binding to specific types of granulocytes. There was little to no binding to monocytes with 0 ES, but with ES present, binding was found to occur to select monocytes. High binding to platelets was found in both leukocyte populations. The investigation of this topic can yield better results in the utilization of liposomes as a delivery system for TRAIL in antimetastatic therapies.

Shidler, Jessica

Institution: *TX - Texas Woman's University*

Discipline: Communication Science and Disorders

Author/Contributors:
Jessica Shidler,
Mallory Pierce,
Cynthia Gill-Sams

Abstract Name: **Rehearsal Visualization Therapy: The Test of Following Directions Evaluation**

Children with language and learning disorders often have co-occurring difficulties in remembering and following verbal directions. This is often due to the syntactic complexity of the directions along with the children's working memory limitations. Few research studies have examined the effects of therapy designed to assist children in improving their ability to follow directions. Due to the lack of research, speech-language pathologists struggle to find evidence-based practices for increasing children's direction-following skills. The current study examined the effects of a therapy called "rehearsal-visualization intervention" on children from 5.0-10.5 years of age. This intervention requires the child to repeat or rephrase the given instruction and to imagine the instruction as it was carried out and completed. Forty-five participants, who had been diagnosed with a language or learning disability, completed the intervention under the direction of speech-language pathology (SLP) graduate students in the public schools of Texas. Data collected by the SLPs was analyzed for changes in direction-following ability as measured by the Test of Following Oral Directions, an assessment to determine the difficulty of directions based on linguistic complexity. Pretest and posttest data from the participants indicated that 86.67% of the children demonstrated increases in the difficulty of the directions they were able to carry out. This suggests that rehearsal-visualization strategy training may offer an effective way to teach elementary-aged children to process and carry out difficult instructions.

Shields, Finley

Institution: *CA - University of the Pacific*

Discipline: Theatre and Dance

Author/Contributors:
Finley Shields

Abstract Name: **Revisiting Stop Kiss 25 Years Later: What Has and Has Not Changed for the LGBTQ+ Community in that Time**

Following the height of the AIDS crisis,Stop Kiss by Diana Son tells the story of two women falling in love, exploring their identities, and fighting for one another despite the societal pressures pushing against them. Callie and Sara both have complicated histories with ex-boyfriends and have never been attracted to women before but find themselves falling for each other as they spend more time together. Stop Kiss deviates from a linear plot and instead opts to alternate between their relationship building up to a first kiss and what happens after that first kiss. The unseen moment connecting these two plots is a brutal hate crime against the two women after their first kiss, leaving Sara in a coma. This moment of hate is a crucial part of the story but is not a focal point of the play; this is a story about love prevailing, not hate. This was first performed in 1998, but the story is still strikingly relevant.Recent legislation and hate groups have shown that, while there has been progress in becoming more inclusive, the sentiments that existed then to harm and oppress LGBTQ+ identifying individuals still exist today and continue to cause harm. With the hate experienced in the community and seen in the news, stories of love and resilience are a powerful reminder that members of the LGBTQ+ community belong and are just as deserving of love and acceptance as anyone else is. I believe this play is important to perform because it focuses on the love of these two women while also acknowledging the cost that non-heterosexual relationships can have. This nuance is necessary when engaging with LGBTQ+ stories today and bringing attention to the in justices still faced by the community without forgetting to celebrate the victories, big and small.

Shienvold, Sophia

Institution: *PA - Moravian University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Sophia Shienvold,
Dr. Anastasia Thévenin,
Dr. Shari Dunham

Abstract Name: **Levels of Cytotoxic Rhodium and Platinum Compounds in Select Organelles within HeLa Cancer Cells**

Cisplatin, a well known and effective cancer chemotherapy drug, has many undesirable side effects. Complexes of rhodium, another transition metal with similar properties to platinum, are being explored in our laboratory to determine whether they are as effective as cisplatin. We have tested the cytotoxic effects of two rhodium complexes, Rh2(butyrate)4 and Rh2(acetate)4, on HeLa cervical cancer cells, and we aim to determine how well and into which cellular organelles these complexes enter. HeLa cells were treated for two hours with 100 μM of each compound, followed by cell lysis and quantification of rhodium or platinum levels by graphite furnace atomic absorption spectroscopy (GFAAS). In addition, we quantified the amount of compound relative to the total protein concentration within the cell (BCA assays) and to the levels of a specific protein (α-tubulin through Western Blotting). Preliminary studies of the whole cell lysates correlate to the IC50 values determined by our lab, demonstrating that compounds that are able to get into cells are most capable of causing cell death. We are now focused on measuring levels of rhodium and platinum complexes able to enter the cell nucleus through nuclear fractionation studies. We are able to isolate robust amounts of protein and DNA from nuclear fractions and are currently in the process of quantifying metal concentration by GFAAS. To ensure we successfully isolate the nuclear fraction, Western Blotting analyses using c-jun transcription factor as a nuclear marker and α-tubulin as a cytoplasmic marker have been performed. Taken together, these studies will help us to determine if the cytotoxicity levels of different rhodium complexes correlate with their ability to enter the cells and target specific organelles, such as the nucleus and/or the mitochondria.

Shiferaw, Meklit

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Physics/Astronomy**

Author/Contributors:
Larissa Rucker,
Meklit Shiferaw,
Analía Dall'Asén

Abstract Name: **Building an Atomic Force Microscope to Characterize Carbonaceous Meteorites**

How planets in our solar system formed is a major question that many scientists from different disciplines are trying to answer. Carbonaceous chondritic meteorites are considered some of the most primitive surviving materials of our solar system, and thus, these objects can provide valuable clues about planet formation, like thermal, barometric and temporal conditions in which these meteorites formed. This information can be obtained through their physical properties (e.g., structure, mineralogical and elemental composition, and morphology) which can be characterized using microscopy and spectroscopy techniques. In particular, atomic force microscopy (AFM) is a technique that can be used to analyze different properties of the surface of a sample (e.g., topographical, magnetic, chemical, electrical, optical and mechanical properties) through accurate and non-destructive measurements with very high resolution at the nano- and micro-scales. To the best of our knowledge, only a few works have been done on carbonaceous chondritic meteorites using AFM to examine their topography, while there no studies done using this technique to analyze their mechanical properties. In this work, we build and test an educational AFM system with different AFM tips and appropriate samples (e.g., CD/DVD/Blue ray surfaces, isolated carbon nanotubes on a substrate) with the final goal of characterizing fragments of carbonaceous chondritic meteorites by examining their topography and mechanical properties, such as adhesion and hardness. These properties allow us to investigate what structures are on the surfaces of the samples and how they have stuck together, which can provide important evidence to understand the origin of these relics.

Shikoski, Lauren

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Lauren Shikoski

Abstract Name: Family Perceptions of Care Provided to Children with Craniofacial Differences

Cleft lips and palates are common congenital disorders worldwide and can occur either together or separately. In America, roughly 1 in every 1,600 babies are born with both a cleft lip and palate (CL/P), 1 in 2,800 are born with only a cleft lip (CL), and 1 in 1,700 are born with only a cleft palate (CP). Previous research demonstrates disparities in access to CL/P care, with children from minoritized backgrounds, children without access to private health insurance, children from economically disadvantaged backgrounds, and children who lived in rural/geographically isolated areas more likely to experience delayed access to care (Broder; Wilson-Genderson, 2012; Harb et al., 2021). Despite its commonplace occurrence, there is little research as to what impacts parental satisfaction with their child's speech and medical procedures in regards to CL/P. The purpose of this research study was to better understand differing parental perceptions of medical/therapy interventions received by their child with CL/P. The author completed semi-structured interviews with six parents of children with CL/P in Wisconsin and Minnesota to better understand how perceptions of care differ between families. Demographic information related to socioeconomic status and geographic location was also gathered and information about these variables in relation to parental feelings about their child's care was elicited during the interviews. Interviews will be analyzed using inductive coding procedures as described by Merriam and Tisdell (2016). It is anticipated that aspects of the family environment (specifically, socioeconomic status and geographic location) may relate to parent perceptions of the quality of care. Understanding parent perspectives regarding treatment for CL/P helps clinicians understand the experiences they go through and will assist the field of Communication Sciences and Disorders (CSD) in providing higher quality services to families from all backgrounds.

Shimek, Carlee

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: English/Linguistics

Author/Contributors:
Grace Schutte

Abstract Name: Invisibly Here: The Future of Life Writing in Writing Centers

In writing studies, Jonathan Alexander has employed the term "life writing" to describe the work of encapsulating the complexities of one's lived experiences through writing ("Writing a Queer Life" 1). For us, such a theory extends the work of writing center scholars considering ways in which private and public struggles take shape through writing centers (Denny, Mundy, Naydan, Sévère, Sicari). These struggles remain increasingly tied to questions around agency and expression in the context of larger unstable social and cultural contexts. And so, we define "life writing" more broadly to encapsulate the work of helping students find meaning, voice, and agency within larger systems of inequity. Indeed, this roundtable starts by positioning life writing as a bridge between personal and academic. Yet, it builds toward offering life writing as praxis—as a writing center method for connecting with writers in a world torn apart, so often, these days.Questions around how students engage, and grow, are always tied to embodied struggles and histories they share with us, through conversation. These struggles manifest through traditional academic prose. At the same time, life writing recognizes writing centers as spaces that welcome creative fiction and nonfiction writing to process mental health and pain—that take seriously students navigating invisible struggles, including histories of shame and repression. We consider, too, how it enables us to better understand advocating for students navigating social anxieties.Presenters will begin by reviewing life writing as an emerging genre and lens we see taking shape in our writing center. Next, before opening for discussion, presenters offer what it might take—including community partnerships-- to develop life writing a genre, as a critical modality, and as a writing center method. We look forward to hearing ideas from other writing centers practitioners.

Shipley, Anise Madeline

Institution: ***WI - University of Wisconsin-Oshkosh***

Discipline: Sociology

Author/Contributors:
Anise Madeline Shipley

Abstract Name: Wisconsin vs. Oregon: Community Justice Oriented Reform and its Effect on Recidivism

Wisconsin has made attempts in reducing the recidivism rates of those who have been incarcerated, but there is still a long way to go. Oregon is a model state with the lowest rates of recidivism in the United States, attributed to its practices of community-oriented rehabilitation backed by evidence-based programming. Our aim with this systematic literature review is to compare the policies and practices of social services in both Wisconsin and Oregon in their efforts to reduce recidivism. Systematically examining documents from scholarly databases and state government websites allowed for this comparison to review each state. With this review, we are searching for the gaps in Wisconsin's programming and practices in comparison to Oregon, so we may understand how to better serve this population and achieve lower rates of recidivism in Wisconsin. In creating such programming to achieve lower rates of recidivism in, we must first understand current practices enacted in the processes of rehabilitation. We aim to compare and contrast efforts to reduce recidivism of the incarcerated population in Wisconsin and Oregon. Our methods used to analyze literature were through scholarly databases and state government websites using an Excel Spreadsheet created to organize criteria of corrections programming and policies. We were able to find the vast differences in programming provided by each state, which concluded our findings and directed us to the importance of state-level involvement with private-sector organizations. Such practices built upon evidence-based programming assist those incarcerated and address the root of the continuous cycle of reoffending.

Shipman, Cade

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Claire Kidwell *Clara Gland* *Bryn Stewart*
Cade Shipman *Emily Kerr* *Grace Thompson*
Rebecca Sheetz *Megan Gawlitta* *David Leland*

Abstract Name: Smartphones, Attention, and Brain Electrical Responses

Given concerns about how distracting smartphones can be, we are interested in how they affect attention-related brain electrical activity. Previous research suggests that the mere presence of one's smartphone can negatively impact behavioral performance on an attention-related task. The aim of our ongoing study is to investigate whether simply having one's smartphone present and visible (although shut off) influences attention-related EEG (electroencephalographic) activity. We are assessing this in two ways. First, subjects perform an oddball task, which requires attention and responses to occasional target stimuli ("oddballs") among many task-irrelevant stimuli ("standards"). The P3, a late component of the event-related potential (ERP), is typically larger to oddballs (which receive more attention) than standards; we predict an attenuation of this oddball effect in the presence of one's phone versus a control non-phone object (tile). Second, we are looking at EEG power in the beta range (13-30 Hz) as subjects passively view their phone versus the control object. Since beta activity is positively correlated with alertness and attention, we predict greater beta power in the phone condition. Furthermore, we predict a correlation between beta power in response to one's phone and attenuation of the P3 oddball effect by one's phone; that is, the more attention is garnered by one's phone the more we think their phone will distract from a phone-irrelevant attention task.Preliminary data suggest increased beta activity in the presence of the phone and replication of the classic P3 oddball effect, but are unclear about an impact of smartphone presence on P3 amplitude.

Shoberg, Bryce

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Bryce Shoberg *Matt Laatsch* *Moriah Weiss*,
Rebecca Boese *Muhaison Ibrahim* *Krysti Knoche Gupt*

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate cultures, one with La3+-rich media and one with Ca2+-rich media. Methylene blue is polymerized onto the surface of a glassy carbon electrode, then harvested bacteria or isolated enzyme is immobilized on the electrode by casting a mixture of the bacteria and tetrabutylammonium bromide (TBAB)-modified Nafion® onto the electrode surface. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria and isolated enzyme electrodes will be compared along with the electrode lifetimes.

Shread, Evangela

Institution: ***CA - University of California - Berkeley***

Discipline: Physics/Astronomy

Author/Contributors:
Trevor Weiss,
Evangela Shread

Abstract Name: Galaxy Morphology and it's Relation to Gas Content in Nearby, Star-Forming Galaxies

Stars are formed in galaxies from the collapse of gas clouds composed mostly of hydrogen. It has been previously shown that the amount of gas in a galaxy depends on its shape and structure (its morphology), and that spiral galaxies tend to host more gas. Measuring gas content is somewhat difficult to do, so it would be beneficial to use easy-to-measure quantities to estimate gas content in galaxies. Our gas measurements are taken from archival data, yielding a sample of 108 galaxies with molecular hydrogen (H2) measurements and 3,338 with atomic hydrogen (HI) measurements. We examine the correlations between HI and H2 gas content and different structural parameters that measure the distribution of mass within the galaxies. We find that gas content is correlated most strongly with the density of stars in the inner regions of the galaxies, especially within the inner 3,000 light-years. Our findings offer a method for astronomers to estimate the gas content using easily obtainable morphological parameters, which is very useful in situations where it is difficult or impossible to obtain direct gas measurements.

Shumaker, Kennadi

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Kennadi Shumaker,
Kaito Thiede,
Ana M.Q. Vande Linde, Ph.D.

Abstract Name: **Changes in Chemical Oxygen Demand of Surface Waters in Dunn County**

Chemical oxygen demand (COD) is an indicator of the amount of oxygen required to oxidize organic and inorganic substances in water. COD testing is commonly done on samples of water contaminated with domestic and industrial waste. Discharge of wastewater by industries introduces organic materials that deplete dissolved oxygen available for aquatic life. In Dunn County, this wastewater disposal coupled with runoff from farms and residential areas can negatively impact aquatic ecosystems. COD analysis is an efficient way to determine the aquatic health of water sources, where increasing levels indicate an increase in substances susceptible to oxidation.To assess the susceptibility to oxidation, water samples were collected following a general timeline of herbicide, pesticide, and fertilizer application in the area. Samples were collected from three locations in Lake Menomin, two locations in Tainter Lake, and two locations in Red Cedar River.One set of samples was collected mid-July, a second set was collected at the end of September. COD analyses were conducted using the Open Reflux Method; samples were refluxed in a strongly acidified solution with excess standard K2Cr2O7 to oxidize any organic and inorganic components present, followed by titration with standard ferrous ammonium sulfate with ferroin indicator to determine the unreacted dichromate.Results of the analysis showed decrease in COD (ppm O2) of samples from one location in Tainter Lake (107.60±50.06 to 36.20±11.26), and two locations in Lake Menomin (97.53±44.01 to 41.80±8.09 and 249.27±31.40 to 83.80±6.94). An increase in COD was detected in an area by the Red Cedar River (20.73±9.45 to 36.07±4.69). These findings may indicate that pesticides, herbicides, and fertilizers from farm run-off, discharges from boats, and algae growth affect the COD levels in these surface water.

Shuster, Shaan

Institution: *PA - Lafayette College*

Discipline: **Economics**

Author/Contributors:
Shaan Shuster

Abstract Name: **An exploration of inflation expectations**

This paper contributes to the discussion of inflation expectations in the United States and seeks to explore the dispersion of inflation expectations in the United States between consumers, firms, professional forecasters, and market-based metrics. The paper will examine the association of these expectations with realized inflation and potential shocks. Inflation expectations are a formative component of macroeconomic theory, as economists believe that expectations are a central determinant of forward realized inflation. The Federal Reserve utilizes inflation expectations as a forward indicator, making expectations integral to monetary policy. By keeping long-run inflation expectations anchored through inflation targeting and forward guidance, central bank credibility is maintained. However, there is no one metric for all inflation expectations, and there is a dispersion between the forecasts of different economic actors. This exploration will include time-series analysis of inflation forecasts from The Michigan Survey of Consumer Attitudes and Behavior (consumers), The Survey of Professional Forecasters (economists), and the FOMC Tealbook Dataset. We expect to find that policymakers are most accurate in predicting inflation when compared to professional forecasters and consumers, and that dispersion between consumers, firms, and market based measures increases in times of higher economic uncertainty. Additionally, the loss functions or informational inputs for actors may differ, inducing dispersion.

Shwaluk, Madeleine

Institution: ***MN - University of Minnesota - Crookston***

Discipline: **Biology**

Author/Contributors:
Tsebaot Getachew *Delainey Lancaster* *Jenna Parfeniuk*
Madeleine Shwaluk

Abstract Name: **General Microbiology Students Searching for Antibiotics in Minnesota's Wetlands**

As antibiotic resistant pathogens continue to emerge, there is a dire need for the discovery and development of new antimicrobial agents. In Fall 2021,University of Minnesota Crookston General Microbiology students collected soil samples from wetlands of Northern Minnesota. They isolated and characterized the microbes to see if they have antimicrobial activity. Nineteen students were able isolate cultures that showed antimicrobial activity against the safe relatives of the ESKAPE pathogens. The current aim of the research is to conduct a longitudinal study to isolate and identify antibiotic-producing bacteria from bogs and fens collected from the previous student work. We hypothesized that some of the pure culture isolates would produce antimicrobial substances and show inhibition against the ESKAPE safe relative pathogens.Procedures followed the general protocols of the Tiny Earth-Studentsourcing Antibiotic Discovery Initiative. Soil samples were further analyzed using standardized techniques to identify the presence of potential antibiotic-producing microorganisms. Bacteria from these samples were transferred to isolates and tested against ESKAPE pathogens to show signs of antibacterial activity. Streak plates were created for all isolates showing antibacterial activity and incubated at room temperature to further separate the microorganisms to purity. This process was repeated until cultures reached purity. Pure isolates were then tested against ESKAPE pathogens to demonstrate inhibition. Pure isolates that showed inhibition underwent chemical fixation using acetone. Further testing is needed to isolate and extract the antimicrobacterial component. Further characterization of the twelve pure isolates that have antimicrobial activity will be reported. Findings from this research could aid in the development of antibiotics with new antimicrobial properties that can fight off pathogens resistant to current medications.

Shwaluk, Paige

Institution: ***MN - University of Minnesota - Crookston***

Discipline: **Biology**

Author/Contributors:
Evelyn Stuck,
Paige Shwaluk

Abstract Name: **Search for Antimicrobial Producing Strains in Minnesota Bogs**

Microbes in Minnesota bogs are a largely underrepresented area of study in the search for new antibiotics. New or unstudied species of Minnesota bog bacteria have the potential to combat the current and worsening problem of multi-drug resistant pathogens. The purpose of this study is to identify if lower pH levels are more suitable for different bacterial colonies as opposed to normal pH levels, and determine if these microbes exhibit antimicrobial properties against safe relatives of the ESKAPE pathogens. Methods used reflect the protocols from the Tiny Earth - Studentsourcing Antibiotic Discovery Project. Soils were processed and microorganisms were isolated from the different locations of bogs in Minnesota and grown on various media: 10% Tryptic Soy, Glycerol Yeast Extract, Nutrient Broth, and Actinomyces media at two pH levels (3.8 and 4.8). More acidic pH levels were selected as Minnesota bog soils are more acidic than other soils. Selected colonies were tested on pathogen plates. Microbes found to have antimicrobial properties were further purified on appropriate media and incubated at room temperature. Microbial growth and isolates are compared to ongoing experimentation of soil microbes isolated on “regular” pH media. Characteristics of the pure cultures of the isolates grown on “low pH” media that demonstrate inhibitory activity will be reported. This research will aid in the process of developing new antimicrobial agents that can be used for advancements in the medical field. This study will serve as a baseline for future antimicrobial research in Minnesota bogs.

Si, Jinkai

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Jinkai Si,
Marc Mc Ellistrem

Abstract Name: **Electrochemically Grown Gold-Nickel Multi-Segments Nanowires and Network Formation**

Transparent conducting films (TCFs) are both optically transparent and electrically conductive, and indium tin oxide is currently the most widely used material for TCFs. The thin film consists of the network of nickel-gold nanowires offer a few advantages for TCFs, including great conductivity and low cost, compared to our current technology. Therefore, the electrochemically grown gold-nickel multi-segments nanowires is a promising material to replace the indium tin oxide for TCFs. In this research, the nickel nanowires with both gold ends can be fabricated via electrochemical growth in porous alumina (AAO) templates, and the nanowires is used to build a nickel-gold nanowire network that can be used to produce transparent conductive glass.

Sibley, Ross

Institution: *TN - Middle Tennessee State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Ross Sibley

Abstract Name: **Synthesis and Characterization of Cyclic Peptoids Against Cryptococcus neoformans and Candida albicans**

Antimicrobial resistant strains of fungal pathogens such as Cryptococcus neoformans and Candida albicans have risen to concerning heights, necessitating the discovery of a safe and effective novel antimicrobial agent. Antifungal peptoids, or peptidomimetic N-substituted glycines, have great potential when it comes to acting as antifungal agents due to greater bioavailability and stability towards proteases compared to their peptide counterparts. RMG8-8 and RMG9-11 are two peptoids recently discovered in the Bicker Lab with observed antifungal activity against Cryptococcus neoformans and Candida albicans, respectively, with comparable antifungal activity in vitro to current antifungals on the market (1.56 µg/mL MIC against Cryptococcus and 6.25 µg/mL MIC against Candida). This study attempts to optimize antifungal activity by cyclizing the aforementioned linear peptoids with the hope that increased rigidity due to a locked conformation will increase the antifungal activity of the antifungal peptoids without affecting the observed permeability. Additionally, peptoids are synthesized via solid-phase synthesis, a relatively inexpensive method that eliminates intermediate purification. To characterize the extent of efficacy, cyclic RMG8-8 (RHS3) and cyclic RMG9-11 (RHS6) have been tested for minimum inhibitory concentrations (MIC) against Cryptococcus neoformans and Candida albicans which will be reported. Should the cyclic peptoids display improved MICs, there is potential for a novel therapeutic that could eliminate the growth of the aforementioned fungal pathogens of interest. Future analysis will include mammalian cytotoxicity on HepG2 liver cells and hemolytic activity against human erythrocytes (red blood cells) to determine whether these peptoids are viable options moving towards animal studies and clinical trials.

Siddhartha, Shriya

Institution: ***TX - Southern Methodist University***

Discipline: Chemistry/Materials Science

Author/Contributors:
Alex Lippert,
Uroob Haris,
Shriya Siddhartha

Abstract Name: Using Photocaged Nitric Oxide Donors to Study Cellular Systems

Nitric Oxide (NO) is an endogenous regulatory molecule that potentially affects a multitude of cellular systems, including mitochondrial signaling pathways. Given its high reactivity, NO can be either beneficial or harmful and has been implicated in both biogenesis and the triggering of pathways that lead to neurodegeneration. However, unearthing the specific effects of NO on mitochondrial dynamics and cellular systems has proven challenging in part due to the limitations of current methods of intracellular monitoring. Hence, the development of a tool for studying this relationship is imperative and can elucidate crucial details on morphological changes in mitochondria as well as other cellular processes. Here, we delineate the synthesis and applications of NOD550, a novel nitric oxide donor that is highly localized in mitochondria. Once photoactivated, NOD550 releases a fluorophore and two NO molecules, allowing for the observance of the dynamics and response of the mitochondria. Microscopy done in tandem with NOD550 serves a major advantage by enabling the study of intracellular signaling in physiologically-relevant conditions. Based on these studies, NOD550 could serve as a valuable tool for further study to be done regarding the release of NO on mitochondrial dynamics and cell signaling systems.

Siddique, Tasneem

Institution: ***PA - Drexel University***

Discipline: Communication Science and Disorders

Author/Contributors:
Tasneem Siddique,
Aleister Saunders,
Swathi Swaminathan

Abstract Name: The Effect of Synthetic A? on Ciliary Membrane and Axonemal Proteins

Primary cilia are immotile microrganelles present in all eukaryotic cells including neurons and astrocytes that regulate fundamental neurophysiological activities in the brain. Defects in the primary cilia lead to a myriad of diseases known as ciliopathies. Ciliopathies have symptoms including a decline in cognitive function and neurogenesis; also seen in patients with Alzheimer's disease (AD). Alzheimer’s disease, a progressive neurodegenerative disorder, is one of the leading causes of death in the United States according to the CDC. AD is a common form of dementia that becomes progressive in older patients (age 65+), it can be characterized as plaque formation in the brain. The hallmarks of Alzheimer's disease are the development of extracellular amyloid- β (Aβ) plaques and tau tangles leading to neuronal death, Aβ is the by-product of the proteolytic cleavage of the amyloid precursor protein, APP. Accumulation of Aβ leads to a cascade of events, ultimately resulting in memory loss and cognitive decline, which are major symptoms of AD. Previously in Dr. Saunders lab, it was observed that APP localizes to the primary cilia in the presence of both extra-cellular and synthetic Aβ, leading to the disruption of the primary cilia. In this study, we aim to delineate the localization of major ciliary proteins, membrane (ARL13B)or axoneme (Tau; pTau), in the primary cilia affected first in the presence of synthetic Aβ. This was observed through immunofluorescence and imaging software to count cells that had specific ciliary proteins. There was a greater decline in axonemal proteins than membrane proteins in a 24-hour incubation. A decline in both types of proteins was seen in a 48-hour incubation.

Siems, Melànie

Institution: *OK - Southern Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Melànie B. Siems,
M. Elizabeth Lewis Hall,
Erin I. Smith

Abstract Name: **Moving from Is to Ought: The Relation Between Primals and Moral Foundations**

Researchers have recently proposed the concept of primal world beliefs (primals) as a primary determinant of many psychological phenomena, including well-being outcomes and personality. Primals are views about the characteristics of the world that seem to be developed early in life and remain fairly constant throughout (e.g., good—bad). In our research, we ask whether the ways in which we view the world also influence our views on how we should behave in the world. In other words, are primals related to moral foundations? A secondary question is whether primals are related to moral foundations above and beyond the contributions of religion, as research has demonstrated the importance of intrinsic religiosity and fundamentalism in predicting moral foundations. In an online sample of 298 Christians living in the United States, it was found that some primals are related to some moral foundations. Seeing the world as Alive was the primal most predictive of moral foundations, and was associated with the foundations of care, loyalty, authority, and purity, as well as adding incremental validity beyond the religious variables to all these moral foundations. Seeing the world as Good and as Enticing were also individually associated with care, while a sense of the world as Enticing also added incremental validity to the moral foundations of care and loyalty. Primals were not related to fairness in the zero-order correlations or the incremental validity analyses. Thus, how we think we should behave seems to be influenced by what kind of world we think we live in, and primals may have a part in the development of moral reasoning. We discuss potential ways in which primals may interact with religiosity in shaping moral reasoning.

sigman, Samuel

Institution: *GA - Kennesaw State University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Samuel Sigman

Abstract Name: **Adverse Childhood Experiences, Resiliency, and Help-Seeking among Undergraduate Students**

Adverse childhood experiences (ACE) are an unfortunate occurrence that have affected countless children worldwide. Previous literature has shown that those who had an adverse childhood experience of any kind would likely have some long-term physical or psychological health outcomes as they aged. Previous literature suggests that those who had an ACE in their childhood had increased chances for suffering from psychotic episodes later in adulthood (Mętel et al., 2018). Furthermore, research has shown that those who had an ACE in their childhood also had increased risk of poor help seeking behaviors in the form of substance abuse disorder (SUD) in their adult lives (Watts et al., 2020). There are gaps in literature regarding ACE in undergraduates, however. Most notably, there are few studies on the associations between ACE and other variables such as resilience, help seeking behaviors, mental health, depression, and stress, which we plan to discover. Our hypothesis states that those who suffered from more severe cases of adverse childhood experiences would have higher rates of depression, stress, and other negative attributes. An online Qualtrics survey was distributed to 101 undergraduates (74F, 23M, 4 non-binary). Participants partook in multiple scales including the Brief Resilience Scale, National Survey of Children's Health, ACE scale, and the Depression, Anxiety, and Stress (DASS) Scale. Results indicated a positive correlation between ACE and levels of stress, depression, and anxiety, but no significant correlation between ACE and help-seeking behaviors or resiliency. Limitations include a small sample size and an uneven number of female participants. Additionally, there was a low distribution of people of color and non-white ethnicities. Future research and a larger and more diverse sample size could infer what interventions could help alleviate the poorer mental health of those who had an ACE.

Sikora, Tabitha

Institution: ***WI - University of Wisconsin-Green Bay***

Discipline: Biology

Author/Contributors:
Jeryn Daggs *Megan Seefeldt* *Tabitha Sikora*,
Davis Lesperance *Douglas Brusich* *Jeryn Daggs*

Abstract Name: Determination of the role of nucleoskeletal factors on mortality and seizures following traumatic brain injury (TBI)

Traumatic brain injury (TBI) is a global public health issue affecting millions of individuals each year. One complication stemming from TBI is the occurrence of post-traumatic seizures (PTS), which affect up to 50% of individuals. Severe TBI, advanced age, and genetics are all associated with increased rates of PTS. However, these factors are poorly understood and the cellular and molecular mechanisms which initiate, drive, and maintain a PTS disease state are not known. These gaps in understanding hinder our ability to treat those suffering from PTS and prevent its development. Recurrent or lifelong PTS is associated with sustained changes in nervous system activity. Gene expression and nervous system activity are highly regulated processes. Central to gene expression are nuclear lamin proteins and associated binding partners. Interaction partners include the Linker of Nucleoskeleton and Cytoskeleton (LINC) complex which serves as a mechanical stress apparatus bridging cytoplasmic and nuclear functions. Lamins and the LINC complex are excellent candidates for factors which span contributions to aging, TBI outcomes, and PTS. We utilized the GAL4/UAS system in Drosophila melanogaster to drive RNAi-mediated knockdown of candidate genes. We specifically targeted the LINC complex factors consisting of fly Msp300, klarischt, klaroid, as well as the two fly lamins. Young flies were administered TBI via either a single, severe injury paradigm or a repetitive, moderate injury paradigm. Animals were then assessed for overall mortality, and also PTS via a simple behavioral assay. We found little evidence that genetic knockdown of candidate factors affected outcomes. Future directions include assessment of aged flies to understand if these factors are similarly negligible with advancing age.

Simmons VanTrease, Teckanous

Institution: ***TN - Middle Tennessee State University***

Discipline: Communication Science and Disorders

Author/Contributors:
Teckanous Simmons Vantrease,
Kathryn Blankenship

Abstract Name: Evaluating School Professionals' Knowledge of Dyslexia

Speech-language pathologists and educators play a vital role in the academic success of students with dyslexia. Due to the common misconceptions that have surfaced, school professionals may experience confusion regarding what dyslexia is and what their role in remediation may be. Researchers have found that pre-service students and in-service school personnel fall victim to myths about dyslexia or lack knowledge of the topic in general. The purpose of this study was to evaluate and compare the accuracy and confidence of dyslexia knowledge among various groups of educators (N = 199) including speech language pathologists (n = 68), K-12 teachers (n = 62), and reading specialists (n = 69). To our knowledge, no other studies have assessed dyslexia knowledge and confidence among the previously mentioned groups. Using a Likert scale formatted survey, this study qualitatively assessed educators' knowledge of common dyslexia characteristics. Item analyses revealed that reading specialists were most accurate in their responses when compared to the literature. Consistent with item accuracy, reading specialists also reported higher confidence in their abilities to effectively work with children with dyslexia. Even though reading specialists' confidence levels were high, there was a lack of confidence among all groups in formal education preparation for dyslexia. The findings indicate an increased need for in-service training and modification of educational curriculums to include explicit dyslexia instruction.

Simona Jr., Roberto

Institution: *FL - Jacksonville University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Stoeber,
Roberto Simona Jr.,
Haleigh Cassidy,
Rachel Howard

Abstract Name: **Examining the abundance, distribution, and behavior of Gray Seals (Halichoerus grypus) in the presence of white sharks (Carcharodon carcharias) off of Scatarie Island, Nova Scotia**

Great white shark (Carcharodon carcharias) migratory patterns within the Atlantic Canada waters have been tracked and studied by the OCEARCH research team since 2018. As part of their migration, adult sharks typically spend most of the summer in the coastal waters of the Northern United States and Atlantic Canada. During this span, the gray seal (Halichoerus grypus) serves as an energy-rich food source for these apex predators. Gray seals form dense colonies on rocky outcrops near shore, but must travel to deeper water to forage. While traveling to deeper water, foraging, and returning to the colony, these seals are vulnerable to predation.Gray seals often congregate on “launch pads”, or shallow areas offshore of the colony, which they use as staging and return areas for their foraging expeditions. To examine the abundance of gray seals at a well-established colony in Nova Scotia, as well as the influence of nearby predators on seal behavior, small unmanned aerial vehicles (UAVs) were deployed off of Scatarie Islands. These UAVs were used to assess the abundance of seals, identify shallow water launch pads, and observe seal behavior. Data collection via drone surveillance provided high-resolution imagery of animal locations and behavior within the research area without disturbing the seal colony. The information gained through this study was then provided to OCEARCH to enhance their understanding of this popular white-shark feeding ground and assist with future fishing efforts.

Simpson, Grace

Institution: *NC - Elon University*

Discipline: Mathematics

Author/Contributors:
Grace Simpson

Abstract Name: **County-Level Factors Associated with COVID-19 Vaccine Uptake in the U.S.**

Since the onset of the COVID-19 pandemic and the emergency approval of vaccines, different areas of the United States have seen differing rates of vaccine uptake among their residents, and we have seen a concerning trend of vaccine hesitancy among many Americans. In our research, we explore the relationships between county-level demographic, socioeconomic, and political factors and the rate of uptake of the COVID-19 vaccine in the United States. While previous studies have used a cross-sectional approach to explore factors related to intention to receive a vaccine, we aim to identify key factors that help to explain why counties differ in their residents’ rates of COVID-19 vaccine uptake using a longitudinal mixed-effects logistic regression approach. We obtained data for vaccinations by county over time from the Centers for Disease Control and Prevention (CDC) and obtained data for potential predictor variables from the Office of the Assistant Secretary of Planning and Evaluation (ASPE), the United States Department of Agriculture’s Economic Research Service (USDA ERS), the MIT Election Lab, and the United States Census Bureau, all of which we merged to create a single analysis dataset in SAS. This analysis dataset includes a diverse array of county-level variables, such as voting data, median household income, racial and ethnic makeup, region, and vaccine hesitancy estimates. Preliminary results show that many of our selected variables are, in fact, significantly related to vaccine uptake over time, with one of the most significant results being the positive relationship witha county’s proportion of votes for the Democratic presidential candidate in 2020. As we continue to build more complex models, we expect to find meaningful results that identify the ways in which several demographic, socioeconomic, and political factors interact to impact vaccination rates.

Sims, Finley

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Halley Weinberger *Finley Sims* *Caleb Chapman*

Abstract Name: **Creating a Pseudoscience Scale: Identifying Gaps in Critical Thinking in Acceptance of Pseudoscience Topics**

Pseudoscience pervades discourse across the world. Acceptance and consideration of pseudoscience was especially highlighted during the COVID-19 pandemic, demonstrating the threat of pseudoscientific beliefs to public health and the prevention of disease. Teovanović et al. (2020) conducted a study that revealed those who were less likely to participate in guidelines such as hand washing or physical distancing were more likely to believe in pseudoscience practices. Additionally, a study by Desta and Mulugeta (2020) revealed that the spread of pseudoscientific beliefs related to COVID-19 had a negative effect on the containment of COVID-19. Across the world, researchers recognize the importance of understanding the origins of pseudoscientific beliefs. García-Arch et al. (2022) created a validated psychometric tool to measure a range of pseudoscientific beliefs, though this scale was developed and validated in Spain. Our goal is to create a pseudoscience scale focused on specific medical beliefs within a United States sample. This is particularly important as pseudoscience beliefs can vary significantly across cultures. We aim to investigate how pseudoscientific beliefs about health and medicine in the United States correlate with intelligence and critical thinking. We created a survey which was distributed electronically to college students, with a goal of obtaining at least 100 responses across different school levels and other demographic characteristics. We began data collection in fall 2022 and plan to continue throughout winter and spring of 2023. This study will contribute to knowledge about what gaps in logic or critical thinking contribute to acceptance and belief in pseudoscience. We hypothesize that individuals with lower levels of critical thinking and intelligence will indicate higher agreement with pseudoscientific ideas. The analysis will aid us in more effectively targeting people with pseudoscientific beliefs in an effort to reduce the acceptance of pseudoscience.

Sinanis, Matthew

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Matthew Sinanis,
Vyta Pivo

Abstract Name: **Manifest Space: Creating the future or repeating the past?**

With the rise of the space industry, are we attempting to escape our planet's severe environmental problems in the hopes of scientific advancement, or are we inadvertently accelerating the death of the Earth? As we enter the new age of space exploration and colonization, we are seeing a massive increase in interest in space, a jump in the number of spacecraft launches, and a crucial switch from federal to privatized control regarding the future of space. Although the prospect of colonizing other planets, facilitating a golden age of scientific discovery, and expanding humanity's reach across the stars is enticing, we must consider the ethics and potential environmental impacts of our actions in trying to reach these goals. Throughout my research, I am analyzing questions pertaining to (1) environmental topics such as the difference between existing and alternate rocket fuels and their respective impacts on human health, ecosystems, and climate change, (2) the cluttering of the space environment, and (3) space mining, resource extraction, and the associated environmental concerns. I continue by exploring the concept of space as a global commonality and how our past actions can warn us that we are heading towards a "tragedy of the commons". Furthermore, I am examining how the 16th-century age of imperialism and the associated exploitation of resources could apply to the future of space development and how we can avoid repeating our previous mistakes with Earth. In approaching these topics, I am analyzing scientific journals, emerging space technologies, opinion pieces, and interviewing professors and professionals from different fields regarding their opinions. I am also interpreting various pop culture sources and audience responses from movies such as Don't Look Up and determining how they can influence the future of space exploration and development.

Singer, Justin

Institution: ***PA - Duquesne University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Justin Singer,
Will King,
Bria Gillard,
Jana Patton-Vogt

Abstract Name: The Role of the Acyltransferase Gpc1 in Anti-fungal Susceptibility in Candida albicans

Candida albicans is a prevalent fungal pathogen listed among the World Health Organization fungal priority list among the critical priority group (1). Most treatments for C. albicans target aspects of lipid metabolism making membrane synthesis a relevant area of research in the organism. One of the most abundant membrane lipids is the glycerophospholipid, phosphatidylcholine (PC). PC is synthesized by two major biosynthetic pathways. These include the phosphatidylethanolamine (PE) methylation and the CDP-choline (Kennedy) pathways. However, we previously identified a third PC synthesis route, denoted the PC de-acylation reacylation pathway (PC-DRP). PC-DRP begins with the deacylation of PC by phospholipases to form glycerophosphocholine (GPC). GPC is also robustly imported into C. albicans through the Git3 and Git4 in C. albicans. GPC is then acylated by Gpc1 to form lysophosphatidylcholine (LPC), followed by a second acylation by Ale1 to form PC. In these studies, we used growth assays to examine the sensitivity of a strain lacking the committed step in PC-DRP, gpc1Δ/Δ, to antifungal agents. We observed sensitivities to drugs targeting membrane synthesis, including ketoconazole, myriocin, and miltefosine. These results indicate that inhibition of PC-DRP via loss of Gpc1 increases the susceptibility of C. albicans to a variety of membrane perturbations.

Singh, Bhavini

Institution: ***GA - University of Georgia***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Bhavini Singh,
Sydni Whitten,
Christopher Modlesky

Abstract Name: Relationship Between Margin of Stability and Joint Kinematics During Gait in Children with Cerebral Palsy

Cerebral palsy (CP) is a neuromotor disorder characterized by abnormal tone, posture, and movement, causing limitations in physical activities such as walking, or gait. For children with CP, previous research studies have suggested an altered ability to control their stability. Margin of stability (MoS) is a unique, dynamic measure calculated from the center of mass trajectory and is utilized to assess the margin an individual has to maintain stability if a perturbation were introduced. Compared to typically developing children, children with CP exhibit a greater MoS in the lateral direction during gait which may be a compensatory method to keep them from falling. This compensatory method may be associated with the body's orientation, which is reflected by joint kinematics. It is plausible that greater MoS in the lateral direction during gait is related to discrepancies in ankle and knee kinematics. The purpose of this study is to determine if there is a relationship between MoS and ankle and knee kinematics during gait. Kinematic data will be collected through three-dimensional motion analysis during a 5 m gait study using retroreflective markers placed on bony landmarks and motion capture software. It is hypothesized that the greater MoS in the lateral direction during gait in children with CP than typically developing controls is related to ankle and knee joint kinematics, such as joint angles in the frontal and sagittal planes.

Singh, Jagjot

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jagjot Singh *Eshita Yadav* *Sonja Virkus*
Andrew Hardaway

Abstract Name: **Physiological linkages in eating disorders via variance in preproglucagon**

The brain plays a crucial role in feeding behaviors through the activation and inhibition of various neural circuits. Properly understanding these mechanisms allows us the ability to create therapies and treatments for diseases relating to feeding and motivation, including obesity related illnesses and various eating disorders. One particular hormone that regulates the mechanisms of feeding is Glucagon-like peptide 1 (GLP-1), a peptide hormone produced by the intestinal cells through the processing of proglucagon. It is known that GLP-1 acts by activating GLP-1 receptors on the pancreas and brain which increases the release of insulin while simultaneously decreasing the release of glucagon, causing a decrease in appetite. Despite its well known function in the pancreas, this phenomenon is still being explored in the brain and is the focus of our study. We performed an anatomical characterization of GCG cells (GLP-1 producing cells) in the nucleus of the solitary tract (NTS) looking at two different cohorts of mice. For one cohort, we used non-transgenic mice and performed fluorescence in situ hybridization for that cohort, and for the other, we crossbred GCGicre mice with L10EGFP mice. We imaged horizontally sliced sections as well as coronal sections of the NTS and then analyzed those cell counts using software that aids in interpreting cell images. Potential sex differences in the distribution of the GCG cells was unknown, therefore this led us to the analysis of the density distribution separated by sex. In our study, we observed no sex differences in the density distribution of GcgNTS cells; however, future studies using this data will be important in understanding the impact GcgNTS cells have on feeding and motivation and what roles they play in advancing current therapies of obesity related illness.

Singh, Toodashwarie

Institution: *NY - York College*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Jamelia Jordan *Toodashwarie Singh* *Kera Johnson*
Carrholane Golisca

Abstract Name: **Using low-cost sensing technology to assess ambient and indoor air quality in Queens, New York during and after the COVID-19 Pandemic**

Air pollution is a leading cause of death in the U.S. Although ambient air quality improved during the COVID-19 pandemic, indoor air pollution (IAP) remains a concern yet data are seriously lacking. Understanding the role of In respiratory illnesses is critical. Americans generally spend about 90 percent of their daily lives indoors. With no indoor air quality (IAQ) health standards, high IAP levels imply greater health risks among vulnerable groups especially children, the elderly and persons suffering chronic respiratory and cardiovascular diseases. This study utilized the AirBeam2, to measure concentrations of particulate matter with a diameter of 2.5 micrometers (PM2.5) to investigate the differences between indoor and ambient PM2.5 levels in Queens, New York during the COVID-19 pandemic in winter, spring and fall of 2020 at six private homes, and in fall 2022. Meteorological parameters: temperature and relative humidity were monitored simultaneously. IAP levels were more than two times greater than ambient levels. Indoor spaces with little or no ventilation and direct emission sources such as smoke from cooking, particularly in kitchens and basements, resulted in higher PM2.5 levels that momentarily exceeded outdoor levels and those in more ventilated areas. Indoor PM2.5 concentrations were significantly higher than outdoor levels, $p = 0.05$. High ambient PM2.5 levels were attributed to vehicular traffic at street-facing sampling sites. Even under normal conditions, infiltration of PM2.5 through ventilation systems could further degrade IAQ. The identification of PM2.5 sources in this study can be useful in devising control strategies for improvement of IAQ and consequently, the alleviation of respiratory health effects. Further, these findings may be used as a basis for in-house modifications including natural ventilation and the use of air filters to reduce exposures, mitigate future risks, and prevent potential harm to vulnerable residents.

Singhal, Anoushka

Institution: ***BRA - Oswaldo Cruz Foundation***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Anoushka Singhal,
Richard Ernst,
Hafida El Bilali

Abstract Name: Lo Shen region of Venus: mapping and interpretation of impressive lava-flow feeder systems with implications for Large Igneous Provinces on Venus and Earth

The Lo Shen region is located on the southern margin of the eastern Ovda Regio (likely an area of ancient continental crust). The Lo Shen name comes from frozen lava rivers that are more than 225 km long.I am using detailed radar from the 1990-1994 NASA Magellan mission to Venus in order to produce a detailed geological map of the Lo Shen region. The research goals are to establish links between subsurface magma (liquid rock) chambers and these channelized lava flows ('lava rivers'). Amazingly, there is no water erosion on Venus because there is no flowing water due to the extreme surface temperatures (450C). In the absence of erosion, the lava sources are recognized by shallow depressions representing surface collapse above an underlying magma chamber. Some depressions are small and sub-circular while others are elongated to irregular in shape. We suggest that the reservoirs with elongated shapes are associated with underlying dykes (sub-vertical cracks filled with magma) while the irregular shapes are sill-like (horizontal pancake-like reservoirs). There are also lines of pits (that appear like sinkholes) and representsurface collapse above dykes.These surface depressions and their channelized flows were emplaced onto a smooth surface, which represents a lava flooding event that suggests flooding of a broad topographic basin. However, the area of lava flooding corresponds to a topographic high (about 140 x 80 km, and about 300-500 m high), which suggests that uplift must have occurred after regional lava flooding. We speculate that this elongated domical uplift was caused by the filling of an underlying sill-like magma reservoir more than 50 km across and 100s meters thick.These features on Venus are analogous to huge volcanic events on Earth called Large Igneous Provinces, which can lead to abreakup of supercontinents and dramatic climate change.

Sipp, Kali

Institution: ***WI - Northland College***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kali Sipp

Abstract Name: Geology of the Archean Nonconformity in Michigan and Wisconsin

The Lake Superior region is home to ancient crystalline rocks that are part of the larger Canadian Shield. Dating back to nearly 3 billion years, these Archean rocks are overlain by a much younger sequence of sedimentary rocks of roughly 1.9 billion years from the Paleoproterozoic era. The eroded surface on which this sedimentary sequence was deposited is known as a nonconformity. This nonconformity tells of over a billion years of erosion, and the Paleoproterozoic rocks provide a record of the environment of deposition.Locations, where this nonconformity is exposed, are few and far between, and two locations in Michigan and Wisconsin have been studied for this project. In Republic, Michigan, mud deposited on a solid planar granite surface transformed into amphibolite schist when it was later metamorphosed. In Pence, Wisconsin, granite Archean blocks, angular pebbles, and cobbles, were buried in fine sand and then later metamorphosed and deformed into a fine-grained quartzite-enclosing granite breccia. Regardless of the elusive nature of the nonconformity, our research using petrographic thin sections from the two sites was able to determine that the two locations' basement rock bodies below the contact did not experience chemical weathering, for if it did, metamorphosed saprolite would have formed 'saprock.' Instead, the fragments of granite intermixed with the quartzite are evidence of an environment in which physical weathering dominated over chemical weathering.

Skubal, Hanna

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Biology

Author/Contributors:
Hanna Skubal,
Mark Levenstein

Abstract Name: Cas 9

CRISPR/Cas9 gene editing provides researchers with the ability to target virtually any location in a genome for disruption. Since its description in 2012, the system has been modified by labs around the world to carry out functions as diverse as gene insertion and COVID-19 testing. This project's goal is to clone, express, and purify Cas9, the restriction endonuclease enzyme component of the CRISPR/Cas9 system, using a bacterial expression vector. The Cas9 gene will be tagged with a 6-histidine sequence to streamline purification. Using IPTG induction with an inducible lac promoter and a pET expression vector, expression levels can be visualized on an SDS-PAGE gel. Cas9 protein is then purified from cell lysates using a nickel resin. After designing guide RNAs, the enzyme will be tested for activity and accuracy to cleave DNA.

Skubal, Hanna

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Hanna Skubal,
Raymond Pugh

Abstract Name: Cross-priming as a Strategy to Improve Drought Stress Tolerance

Water deficit stress due to heat, drought, and/or salinity is one of the major environmental factors affecting the survival rate and productivity of plants/crops. Seed priming, stress priming, and Cross-stress tolerance(all of which are based on plant stress memory) are promising methods to improve plant/crop tolerance to water deficit stress. Seed priming is when seeds are soaked in water or a solution containing a substance that has the ability to produce improved stress tolerance. Stress priming is when the plant/crop is exposed to a mild form of the stress they will encounter later in their life cycle. Cross-tolerance is when a plant/crop are exposed to a mild form of stress that results in improved tolerance to a different stress that might trigger similar adaptive responses by the plant/crop.Although there is substantial evidence in the literature suggesting the benefit of seed priming or stress priming or cross-stress tolerance to improve water deficit stress tolerance in plants/crops, there is very little evidence of whether seed priming and stress priming together improves stress tolerance, and if so, is there improved stress tolerance compared to seed priming or stress priming alone. The same is true for seed priming and cross-stress tolerance together. In this experiment, Arabidopsis thaliana are seed primed with 10 microM Abscisic Acid (ABA) and exposed to a mild drought or mild salinity stress before being exposed to more severe drought conditions. We anticipate that compared to control samples (no seed priming andno stress/cross-stress priming, no seed priming withstress/cross-stress priming, seed priming but nostress/cross-stress priming), cross-primed samples will demonstrate improved drought stress tolerance via a higher relative water content in the leaves and lower levels of hydrogen peroxide, a common reactive oxidative species that is increased during stress exposure.

Slack, Alexis

Institution: *SD - University of South Dakota*

Discipline: **Biology**

Author/Contributors:
Alexis Slack,
Christopher Anderson

Abstract Name: **Using CT scans to create 3D skull puzzles as open access pedagogical tools for anatomy classes.**

As the digitization of museum specimens becomes more widespread and access to affordable 3D printing technologies increases, the use of Computed Tomography (CT) technologies in biological research of anatomical features is well positioned to contribute to the advancement of pedagogical experiences through the creation of physical models for teaching. Such complementary efforts may enhance broader impacts associated with biological research in anatomy by simultaneously boosting the education system with a more hands-on experience for students and providing an alternative to expensive taxidermy and other artificial models. Using an existing dataset of µCT scans of chameleon specimens originally collected to examine the comparative skeletal anatomy of the family, we created a 3D puzzle of the skull of one chameleon specimen to aid in teaching squamate cranial morphology. We then created a 3D puzzle of the skull of a human from a donated scan to aid in teaching human skeletal anatomy. After segmenting all the bones from each respective skull and lower jaw, the individual skeletal elements were 3D printed to create disarticulated skulls that students can learn to reconstruct. The elements were individually dip-dyed to color code the different bones and small magnets were inserted into the printed components to enhance the overall learning experience. We used this 3D puzzle of a human skull in an upper-level anatomy course and surveyed the students about the effectiveness of this physical model in learning the bones of the skull. Following additional refinement, these models will be broadly disseminated to educators worldwide by uploading them to an open-access online database with instructions on preparing the 3D puzzles.

Slager, Sara

Institution: *MA - Simmons University*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Sara Slager

Abstract Name: **"From Doctors to Your Doorstep: A Feminist Analysis of 1970s Reproductive Rights Activism in the Greater Boston Area"**

My project examines feminist activism in the Greater Boston area during the 1970s, focusing on the reproductive rights movement. I define feminism as the social and activist movement toward gender equality. The project aims to understand how reproductive health information shifted from being solely in medical professionals' hands to being readily available to the masses. During this era, many women felt that medical professionals and gynecologists were unsafe and did not respect them. Doctors tended to be straight, male, and white, making it difficult for them to understand the plight of women and thoroughly examine intersectional identities. There was little access to information about female autonomy, and illiteracy surrounding women's bodies was rampant. After the 1970s, there was an explosion of information and increased public dialogue surrounding reproductive rights. I examined how these shifts occurred and how activism developed to broaden access to reproductive health care during this period.I used a mix of archival and oral history sources in my project. I conducted archival research at the Snell Library at Northeastern and The History Project in Boston. I examined posters, fliers, and meeting minutes from various feminist organizations. I also completed nine oral history interviews with various feminist activists from this period. My narrators were members of organizations such as the Cambridge Women's Center, Gay Community News, Bread and Roses, and the Women's Community Health Center.During my research, I had a few significant findings. During the reproductive rights movement, activism did not solely focus on abortion access. Instead, they used a lens of reproductive justice that included discussions surrounding motherhood, sexual assault, homophobia, and disability. Feminists during this time also engaged in coalition building that allowed them to get their message to a broader audience. It was coalition building that promoted the shift of information.

Sliva, Madelyn

Institution: *MN - St. Catherine University*

Discipline: **Biology**

Author/Contributors:
Madelyn Sliva *Evin Magner* *Clay Carter*
Rahul Roy

Abstract Name: **Investigating microbiomes of colored nectars: Characterization of isolate growth and inter-species interactions**

Pollination is the transfer of pollen from one flower to another that leads to the formation of fruits and seeds. Pollinators are insects or animals that transfer the pollen amongst flowers. Nectar is a sugar-rich reward that plants produce to attract pollinators. It is a complex liquid that contains sugars, proteins, amino acids, lipids, and various other specialized chemicals to help pollinator health. Recent studies have unlocked new understandings of the microbiomes of nectar. There have been multiple microbial species reported to exclusively inhabit certain nectars. Their roles in pollinator health and outcompeting other harmful plant pathogens are an active area of study. We focused our research on the microbes in two colored nectar producing species- Nesocodon mauritianus and Melianthus sp. Colored nectar is rare in nature and attracts specialized pollinators such as birds, rodents and lizards by providing visual cues. Recent studies have revealed novel pigments mediating colors such as red and black in these species. We investigated the microbes in the nectar of these species by serial dilutions of the nectars on various microbial media, ranging from rich (Tryptic Soy Agar and Yeast Mannitol Agar) to minimal (Reasoner's 2A Agar). Species identity was confirmed by DNA extraction of the bacterial colonies and sequencing of the amplified 16S rRNA gene sequence and alignments. We consistently found at least four different culturable microbial species growing in the red nectar of Nesocodon mauritianus and ten microbial species in the nectar from Melianthus sp. Ongoing investigations include testing the interactions between these species and other known nectar microbe generalists such as Metschnikowia reukaufii. We are also testing for the antimicrobial activities of these nectars. This will hopefully lead to more sustainable ways to prevent plant diseases, especially the ones where pathogens gain entry via the flowers.

Smith, Amber

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Amber Smith *Marie Perkins* *Ben Sedinger*
Shannon Finnerty

Abstract Name: **Mercury Exposure in Migrating and Breeding Wood Ducks in Central Wisconsin**

Wood ducks (Aix sponsa) are an emblematic waterfowl species that have faced trials and tribulations such as habitat loss and overharvest, resulting in low population numbers in the mid-1800s to early 1900s. Successful conservation and management practices have resulted in population increases across their range, yet there has been a recent shift in these trends in Wisconsin, and wood duck abundance has become annually variable. Exposure to environmental contaminants is a rising concern for wood ducks due to their use of forested wetlands and diet ofaquatic invertebrates. Mercury is a widespread environmental contaminant increasing globally because of human activity. Mercury has been found to magnify through food webs, resulting in higher concentrations with increasing trophic positions. While there is growing concern about mercury exposure in wetland birds due to its bioavailability and toxicity in aquatic environments, little is known about mercury exposure in wood ducks in Wisconsin. Mercury exposure can have negative health effects on waterfowl such as immune suppression and neurological changes. The objectives of this study are to 1) examine mercury exposure in wood ducks that use wetlands in Wisconsin and 2) investigate factors influencing feather and blood mercury concentrations in wood ducks. We captured 49 wood ducks in central Wisconsin utilizing swim-in traps, walk-in traps, cannon nets, and nest box checks. After capture, we collected blood samples in addition to breast, flank, and axillary feathers from birds for mercury analysis, and took morphometric measurements. We hypothesize that blood and feather samples collected in this study will have mercury concentrations associated with negative health effects on wood ducks, specifically high parasitic load, high white blood cell count, and poor body condition, measured in a concurrent study. This study aims to fill a knowledge gap and inform wildlife managers of mercury exposure in wood ducks.

Smith, Cole

Institution: ***PA - Swarthmore College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Cole Smith,
Joseph Towles

Abstract Name: An Investigation of Muscle Thumb-tip Movement Patterns: Application to Restoring Lateral Pinch Grasp Following Tetraplegia

It is believed that 65-75% of the persons diagnosed with tetraplegia would benefit from reconstructive surgery to regain the ability to perform activities of daily living. This surgery would improve their functional independence and reduce the annual assistive care costs ($80 million) in the US. Tendon transfer surgery, a reconstructive surgical procedure involving surgical transfer of a healthy muscle–such as the pronator teres (PT) or the brachioradialis (Br) muscle–to the paralyzed flexor pollicis longus (FPL) muscle of the thumb, is commonly performed to restore lateral pinch grasp. Functional outcomes, however, have been mixed. Previous simulation studies in our lab have shown that attaching Br or PT to multiple thumb muscles, rather than to just FPL, could improve pinch force characteristics. In particular, we found 64 such muscle combinations (13 muscle pairs and 51 muscle triplets). The goal of this present work was to determine whether these muscle combinations could generate natural lateral pinch movement. For this purpose, we used a Jacobian-based framework to develop a planar, 3-DOF model of the thumb consisting of 3 hinge joints and 3 bones. Execution of the model determined whether individual muscles and muscle combinations could begin to move the thumb from an extended posture to the index finger in a natural way. We found that only muscle combinations, and not individual muscles, have the capacity for the desired movement. Moreover, muscle combinations should consist of both a flexor and an extensor, and one of those muscles should be the FPL. Taken together, these model findings reduce the possible 64 muscle combinations from our previous study to 10. Further computational modeling and in-situ cadaveric simulation work will further refine these muscle combinations by considering natural lateral pinch movement in 3D and throughout the full range of grasp motion.

Smith, Cole

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: History

Author/Contributors:
Cole Smith

Abstract Name: Anti Indian Propaganda and American Expansionism in the 18th and 19th Century

This research examines how racist anti-Indigenous propaganda leading up to, during, and after the Revolutionary War contributed to the mass land dispossession of Indigenous peoples in the nineteenth century. I examined newspaper databases, most prominently Americas Historical Newspapers, to find examples of anti-Indigenous imagery and articles that cultivated an anti-Indigenous sentiment among revolutionary era readers. Secondary resources such as Robert Parkinson's work titled "The Common Cause" acted as a guide for finding useful authors, newspaper publications, and dates for the primary research. Prior to the revolution, the thirteen colonies had little to do with one another and all placed negative labels on each other. Colonial leaders knew that they could not win a war for independence if the colonies could not unite. Revolutionary leaders built a common cause among colonists by stoking their fear and hatred of Indigenous peoples who inhabited the land. Capitalizing on this fear, elite and wealthy colonists printed mass propaganda that portrayed Native Americans as a savage British ally who would threaten the safety of the colonies. Such imagery was widely utilized by printing newspapers full of misinformation and manipulation tactics. Following Independence, the leaders of the new nation had an opportunity to end the racist lies that they had used as a tool for victory and seek peace with their Indigenous neighbors. Instead, they doubled down on this propaganda and ensured that new generations of Americans would grow up being indoctrinated by the same racist rhetoric that was used to win the war. The Revolutionary War propaganda that villainized Indigenous peoples as violent and savage enemies that helped win American Independence was strategically and intentionally upheld to play a role in justifying American expansion and land theft in the nineteenth century.

Smith, Drew

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Drew Smith,
Grace Cunningham,
Elizabeth Glogowski

Abstract Name: **Materials Characterization of Foam for Insulative Use to Optimize Tumor Ablations**

Tumor ablation is a minimally invasive surgical procedure in which a needle-like probe is injected to apply extreme heat or cold to solid tumors in areas such as the liver, kidneys, and lungs. Ablation is a common and highly effective cancer treatment method; however, oftentimes, healthy surrounding tissue is damaged in the process. Saline or carbon dioxide is currently used to insulate healthy tissue, but these tend to sink or rise in the body, respectively, and lose insulative contact. A biocompatible foam has been created using FDA-approved materials and promises to offer better stability and stiffness in order to maintain optimal contact with target tissues. Detailed lab studies of the foams have been conducted using rheology and pendant drop tensiometry. Characterization of these properties is valuable in assessing the foaming capabilities of the materials used and quantifying the physical behaviors of the foam. Rheology was used to determine the viscosity and viscoelasticity of the solutions and foams, and pendant drop tensiometry was used to measure the solution's surface tension and interfacial tension. The data collected from these methods was used to optimize foam stability such that it would be a more ideal insulation method for the tumor ablation procedure. Material characterization of the foam and data on its insulative properties is necessary for publication of the results and IRB approval for human trials. The potential applications of the foam could reduce side effects, complications, and hospitalization for patients following tumor ablations and improve an already effective cancer treatment.

Smith, Ella

Institution: *GA - Kennesaw State University*

Discipline: Communication/Journalism

Author/Contributors:
Emily Scheinfeld,
Ella Smith

Abstract Name: **Does End-of-Life Communication With Parents Impact Self-Esteem and Relational Satisfaction?**

According to previous studies, death is taboo, and families usually underestimate the dire need to talk about final wishes and wills, among other end-of-life (EoL) related issues (Nickels; Tenzek, 2022; Omilion-Hodges; Swords, 2017, Prince-Paul; DiFranco, 2017). Having EoL conversations allows final wishes to be better satisfied, alleviates needless suffering, and can allow an opportunity for a good death (Tenzek; Depner, 2017; Zadeh et al., 2018). Healthy EoL communication can also impact outcomes for family members and caregivers alike. For example, personal growth allows family members to say goodbye, connect, show love, and explore their own identities (Generous; Keeley, 2022; Keeley, 2007; Keeley; Generous, 2017; Shames; Barton, 2003; Yingling; Keeley, 2007). Additionally, EoL conversations can reduce levels of guilt (Scheinfeld; Lake, 2019) and can contribute to personal growth (Generous; Keeley, 2022) and coping mechanisms following the death of a parent (Generous; Keeley, 2021). Therefore, the aim of this study is to explore the role of final conversations in a survivor's identity post-parental death. Data is currently being collected via convenience snowball sampling within a large southwestern city and university community. Participants will complete an anonymous online survey using quantitative measures to assess the independent and dependent variables and to collect demographic information. From the results, we hope to show that having a final conversation that covers the survivor's identity is not only important but also leads to higher levels of self-esteem and relational satisfaction. Understanding the role of final conversations in a good death experience for survivors advances the field of end-of-life communication. Moreover, these results may help healthcare practitioners in supporting families experiencing the end of life or their loved ones and help guide them through the bereavement process.

Smith, Emma

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Emma Smith *Erin Donohue* *Molly Carley*

Abstract Name: **Coping with a Partner's Death due to COVID-19: The Impact of Coping Styles on Posttraumatic Growth and Complicated Grief**

A loved one's unexpected death from COVID-19 relates to higher levels of prolonged grief (Eisma et al., 2021). Prior to COVID-19, unexpected loss research suggests that avoidant coping (e.g., denial) significantly predicts complicated grief (Schnider et al., 2007), while problem-focused (e.g., positive reframing) and emotion-focused (e.g., support) coping predict posttraumatic growth (Fisher et al., 2020). Our study examined what coping styles predict complicated grief and posttraumatic growth for individuals whose partner unexpectedly died from COVID-19.Participants (N=37; 36 females; Mage=52.57 years) completed an online survey (MTimeSincePartnerDeath=9.74 months). Measures included Inventory of Complicated Grief (Prigerson et al.,1995; α=0.89), Post-Traumatic Growth Inventory (Tedeschi; Calhoun, 1996; α=0.95), and Brief-COPE (Carver, 1997; α=0.74), comprised of problem-focused, emotion-focused, and avoidant coping facets. Table 2 presents target variable correlations.Analyses included simple and multiple linear regressions controlling for age, education level, and time since death. Specific to avoidant coping, denial (β=7.71,p=.001) significantly predicted complicated grief (R2=0.40, F(1,31)=24.29, p=.001). Specific to emotion-focused coping, acceptance (β=-5.24, p=.008) and self-blame (β=5.23, p=.009) significantly predicted complicated grief (R2=0.39, F(2,30)=12.01,p=.001). Specific to problem-focused coping, active coping (β=12.41, p=.001) and positive reframing (β=10.29, p=0.006) significantly predicted posttraumatic growth (R2=0.58, F(2,30)=20.72, p=.001). Specific to emotion-focused coping, acceptance (β=13.02, p=.001) and religion (β=8.60, p=.005) significantly predicted posttraumatic growth (R2=0.60, F(2,30)=21.89, p=.001). Findings support previous research suggesting problem-focused coping and religion lead to grief management and posttraumatic growth (Fisher et al., 2020; Zara, 2020) and avoidant coping predicts complicated grief (Schnider et al., 2007). Future research shouldfurther examineemotion-focused coping facets, as they predicted both outcome variables in this sample.

Smith, Ethan

Institution: *OK - The University of Tulsa*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Aya Bayoumi,
Ethan Smith

Abstract Name: **Kinetic-Energy Harvesting Floor Tiles**

Today, over half the world's population lives in urban environments. Each day, hundreds of millions of pedestrians walk through city centers en route to work, school, or their respective homes. Walking is a repetitive action, and thus each step is seen as an opportunity to contribute to the world's energy needs. This project seeks to design and manufacture an energy-harvesting floor tile that converts the kinetic energy of a human step into electricity efficiently and cost-effectively while maintaining an easily implemented product. While similar tiles exist, none of them can combine all of these benefits. Our unique design combines electromagnetic induction with an effective linkage of gears and a flywheelto cause continuous rotation of the DC motor shaft when stepped upon, which consequently leads to the harvesting of energy. This generated electricity may be stored in a capacitor or connected to a device for immediate consumption of the energy, depending on the needs of the client. The tileproduced 10.2 W/step cost USD 181.38, and it was easy to implement. Our approach led to our design outperforming other tiles in the sector by a factor of 1.4-24in terms of cost per unit of power and was cheaper to manufacture than other tiles. The ultimate purpose of this research is to pursue and discover alternative approaches to the energy-harvesting tile and create a more viable solution for working towards a more sustainable world.

Smith, Kate

Institution: *WI - University of Wisconsin-Superior*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Katie Smith,
Lorena M. Rios Mendoza

Abstract Name: **Polycyclic Aromatic Hydrocarbons and Their Analysis Using GC/MS**

Polyaromatic hydrocarbons (PAHs) are a family of over 100 different chemicals formed during the incomplete combustion of substances like coal, oil, natural gas, garbage, tobacco, and charbroil meat (Rios et al., 2007). These PAHs are toxic organic contaminants composed of two or more benzene rings. USEPA has classified 18 of these compounds as priority pollutants based on their toxicity to human health. There are two main origins of PAHs, petrogenic (from petroleum) and pyrogenic (incomplete combustion). PAHs are often introduced into waterways by oil spills and urban runoff and are semipersistent toxic compounds. The main goals of this research were to investigate PAH concentrations from samples collected after the Husky Oil Refinery event in April 2018 and compare these concentrations with historic PAH concentrations in the same study area. The second goal was to change the He gas to H2 gas in the Gas Chromatography / Mass Spectroscopy (GC/MS) analytical instrument. Calibration of the GC/MS was completed using standards of known percent of concentration recovery. Experimental samples were extracted by liquid-liquid extraction using hexane as a solvent. These samples were tested before the analysis of the unique samples from 2018. The average percent recovery of standards was 84% using the H2 gas. The change in gas type was evaluated to obtain the correct signal from the GC/MS analytical instrument.

Smith, Kennedy

Institution: *OK - University of Central Oklahoma*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Kennedy Smith

Abstract Name: **Observational Astronomy in Contemporary Art: How the Stars Inspire Us**

As humans, we have admired and observed the night sky and astronomical events throughout history. With the inventions of the Hubble and Webb Telescopes, we have captured spectacular landscapes throughout the night sky and deep within the expanding space. We have also been able to capture many amazing and spectacular astronomical discoveries using photographs. However, there are not a lot of studies being done on the significance of observational astronomy in contemporary art, especially with how the two relate. Therefore, in this study I will be focusing on the works done by the artists and astronomers Chesley Bonestell, Chris Impey, and Heather Green. With those artists and astronomers in mind, I will first be exploring what connects astronomy to art. As well as, whether or not observational astronomy can be considered an art. Why do we find astronomy interesting? What inspires us to capture the night sky or astronomical events? Have any artists helped with astronomical pursuits? Were there any astronomical pursuits that have inspired any artists? Lastly, how has art and science worked together through STEAM? By using art historical research and studies on astronomy, this study demonstrates that the close relationship between art and science broadened the notion of contemporary art and brought knowledge of observational astronomy to a wide audience.

Smith, Lucille

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Carolyn Shult,
Lucille Smith,
Karissa Snyder,
Joshua Steczynski,
Trinity Wilson,
Sudeep Bhattacharyay

Abstract Name: **Exploring the Disorder in von Hippel-Lindau Tumor Suppressor Protein by Molecular Dynamics Simulations**

The von Hippel-Lindau tumor suppressor protein is known to cause tumors in multiple vital human organs such as the spinal cord, retina, and varying blood vessels within the brain. It belongs to the class of intrinsically disordered proteins, which lack stable secondary or tertiary structures and their flexibility allows them to engage in a wide variety of interactions with other molecules making them biologically efficient. The folding of these proteins is still a mystery, and the conformational dynamics have remained elusive due to the absence of reliable three-dimensional structure. A simulated study of structural dynamics in the presence and absence of crowders could provide valuable insights of the conformational flexibility of the protein. The structure of the disordered protein was taken from Alphafold database - the database was created by artificial intelligence-aided protein structure solving. Five different protein systems were built: one in only water, one in ethylene glycol, and three more in the presence of varying sized polyethylene glycol ($C_{2n}H_{4n+2}O_{n+1}$) crowders (molecular weights ~ 600, 8k, and 20 k). A 50 ns molecular dynamics simulation was performed, and the data was used for further analysis. The effect of these crowders on the conformational dynamics and energetics was studied in detail using statistical tools. Results obtained in these studies will be presented.

Smith, Noah

Institution: *WI - Marquette University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Noah Smith

Abstract Name: **Monks, Animals, and Discernment from the Third to Eleventh Centuries**

Friendship with animals in the lives of desert hermits are portrayed in two prolific texts of Western Christianity: John Cassian's Conferences, written in 420, and Sulpicius Severus' Dialogues, written around the same time. Cassian is important for establishing rules of living for monks in the early days of monasticism, and Severus is also known for writing about desert monks and the life of Saint Martin of Tours. The human-animal connections in their writings are paradoxical; they write about the rigorous ascetic practices of desert monks, yet these same monks learn from their animal companions whose instinctual natures are the opposite of their lifestyle. A parallel literary tradition, the medieval bestiary, can help unravel this paradox. The medieval bestiary is a text which describes traits of animals, and sometimes, plants and stones, writing their natural characteristics as an allegory for living virtuously and avoiding vice. The first bestiaries originated in the third century, but the tradition grew in the Middle Ages. I argue that, in one bestiary text, the eleventh century Physiologus Theobaldi, the descriptions of animals educate readers on choosing good habits and relationships. Examining this bestiary in concert with monk-animal friendships in Cassian and Severus highlights the importance of discretio, or discernment, a virtue which allows one to choose the right path or course of action throughout one's life. Not merely fantastical, individuated portrayals of animals,I contend that the Physiologus Theobaldi invites medieval readers into a worldview in which following the right path is not a matter of rigid rule following, but one of case-by-case, animal-by-animal discernment. Ultimately, an appreciation for animals' natural traits does not mean shunning rationality; rather, it is indispensable to the medieval Christian's life choices that lead where one needs to go to become who one is called to be.

Smith, Robert

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: **Biology**

Author/Contributors:
Robert Smith,
Matthew Wiedeman,
Jaeger Reed,
Kristina Timmerman

Abstract Name: **The Non-native Australian Pine (Casuarina equisetifolia) does not Appear to Affect Plant Species Diversity**

Australian pine (Casuarina equisetifolia) is an invasive plant species in many tropical and subtropical environments. This species is reported to accelerate erosion and limit native plant diversity. Therefore, we were interested in the plant diversity under the canopy of pines on San Salvador Island, Bahamas. We hypothesized that there would be a relationship between plant diversity and association with pine groupings. We predicted that Australian pine would reduce plant diversity under its canopy. Data was collected between 9 – 11 March 2022. San Salvador is a small island, so we divided it into six zones and randomly selected two pine trees in each zone. We paired each experimental plot with control plots (a plot with no Australian pine) by walking in a randomly selected direction away from the pine plot and collecting the same type of data at that plot. Plant species were recorded under pine canopy and in the similar sized control plots. Data analysis suggests no significant reduction of species diversity under the canopy of the pine in comparison to the control locations ($\chi 2=0.09$, df=1, p=0.76). This was a surprising outcome and could be a function of variable soil nutrients and a lack of allelopathy by the pine (which has been reported in earlier documents). Future studies should also consider nutrient content of soil, amount of solar influx, and distance to salty or saline water. This study can provide further insight into the effects of Australian pine as an invasive species as well as invasive plant species in general.

Smith, Ryan

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Devon Schroeder,
Gabriel Clark,
Ryan Smith,
Isacc Sundermeyer,
Dylan Wells

Abstract Name: **Perception of Information and Source Reliability B**

The term misinformation is being used so frequently now that it has become an annoying word to represent almost nothing. The perception of whether information is valid seems to be very dependent on who is giving the information. There are many different factors that play a role in deciding whether a source is credible or not. In the US today we are seeing that individuals are siding with news sources that have a similar political ideology when deciding what is fact and what is misinformation. The purpose of this research is to determine what factors correlate with someone'ssuseptiblity to misleading information. The personal characteristincs being studied include racial/ethnic background of the messenger and receiver, political ideology of the messenger and receiver, news media sourcepreference, expertise level of the messenger and receiver, and percieved trustworthiness of the messenger. The study will use information about controversial topics given by various sources and determine the level of confidence the subjects have about the legitimacy of the information. Demographics regarding the subjects will be collected. A correlational analysis will be made between traits of the message sender and receiver and the rating of the source information. Data analysis will be completed in the spring semester of 2023.

Smith, Rylei

Institution: *NC - Elon University*

Discipline: **Mathematics**

Author/Contributors:
Rylei Smith

Abstract Name: **Country-Level Factors Associated with International COVID-19 Vaccine Uptake**

In March 2020, the World Health Organization declared the COVID-19 pandemic. Since then, healthcare professionals around the world have worked to develop vaccines to alleviate symptoms and slow the spread of the disease. Although multiple vaccines have been approved for use, much of the world's population has yet to be inoculated because of inequitable distribution of the vaccines. Of particular concern is the rate of uptake in low-income countries, which have experienced the highest morbidity and mortality rates during the pandemic but have the lowest vaccination rates. The current study aims to investigate what factors at a country-level are related to the uptake of these COVID-19 vaccines internationally. To explore this research question, we first aligned and merged publicly available data from multiple online sources, including Our World in Data, the CIA World Factbook, and the World Bank. We are using longitudinal mixed-effects modeling to analyzevaccine uptakeover time. Our models include country-level factors such as GDP per capita, income group, geographical region, and maternal mortality rate, among others, as potential explanatory variables with vaccine uptake as measured by percentage of the country's population that has received at least one dose of a COVID-19 vaccine as the response variable. Preliminary results indicate that income group, healthcare spending, GDP per capita, and life expectancy are positively associated with the percentage of a country's population that has received at least one vaccine dose, while unemployment rate, child mortality rate, and maternal mortality rate are negatively associated with the percentage of the population having received at least one dose. Moving forward, we will continue to fit more complex models that investigate associations among multiple variables simultaneously.

Smith, Samson

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Samson Smith

Abstract Name: **Synchronizing 120 Cameras and the One-Client-Many-Server Architecture of the PARSEC Photogrammetry Rig**

The PARSEC project sought to construct a rig of connected cameras and develop software to maintain and control them for the purposes of photogrammetry. The final rig consists of 120 Canon cameras all surrounding and pointing at a single target. The cameras are each connected to one of four computers and an ESPER trigger box. They are controlled by a program we developed using a JavaScript wrapper of Canon's EDSDK. To create a model of the target all cameras are fired via their trigger boxes and the images are sent through the computers to be saved in a single network storage for processing through specialized photogrammetry software. The "Canon Camera Control Client" we developed utilizes a few techniques to minimize the hindrance to users while managing the large amount of processing required to control so many cameras. To split up processing, the system uses a nontraditional architecture with a single client running many servers. Each of the four computers on the rig run one instance of our server side program and control only a quarter of the cameras, but all the servers are synchronized and controlled from a single client running on our primary workstation. When a task needs to be run on all cameras, the client sends instructions for a bulk task to each server via HTTP. However, large tasks like image downloads can take too long, causing the HTTP request to timeout while awaiting a response. For this reasonwe also use socket.io to subscribe the client to later messages from the server. This waythe HTTP can resolve instantly indicating that the task was started, and the client will wait for a later socket message to confirm the final results. These techniques allowed for much faster task processing and smoother user experience while controlling the rig.

Smith, Taylor

Institution: *MN - St. Olaf College*

Discipline: **Mathematics**

Author/Contributors:
Anja Logan,
Nathaniel Mersy,
Taylor Smith,
Joash Daniel

Abstract Name: **Quantifying organic phases in coral skeletons at the nanoscale**

Nanoscale mineral structures of coral are not well understood. When corals build their skeletons, they are composed of nanoscale crystalline structures. It is known that coral skeletons are affected by ocean acidification and climate change at the macroscale. However, understanding how the coral skeleton-building process functions at the nanoscale would allow for better modeling and prediction of how coral might fare under varying ocean conditions and climate changes. Specific isotopes in coral skeletons can mark the organic or mineral parts of the skeletons, and thus can be used as indicators of different phases in the coral skeletons. Our goal is to statistically investigate quantitative relationships that exist between different organic and mineral associated isotopes in coral skeletons. Multiple corals were lab-grown under various controlled conditions at St. Olaf College, and they were analyzed at the nanoscale by a mass spectrometer to extract concentration data for specific isotopes present throughout the skeletons. We use Pearson correlation to measure the strength of the relationship across coral isotopes and Mander's coefficient to measure co-occurrence. Co-ocurrence looks at the high concentration clusters of isotopes across isotope pairs. Knowing the quantitative co-occurrence of isotope pairs in the coral skeletons helps in understanding the spatial distribution of organic molecules within the coral skeleton, which in turn can help us better understand the growth process of the coral skeleton itself.

Smitsdorff, Jacob

Institution: *WI - University of Wisconsin-Platteville*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Jacob Smitsdorff

Abstract Name: **Illuminate cellular organelles via fluorescence microscopy**

An ability to interpret the inner workings of cellular machinery requires an advanced knowledge of subcellular architecture. The goal of my research is to illuminate cellular organelles within mouse macrophage cells using fluorescence microscopy. Organelles are targeted with different reagents utilizing several fluorophores. For example, green fluorescent protein (GFP), Texas Red, and4′,6-diamidino-2-phenylindole (DAPI)can be used to examine different regions of a cell. Fluorescent microscopes produce stacked images of these fluorophores revealing their internal organization. Once organelle localization is established,fluorescently tagged proteins can expand analyses to other functions like protein trafficking and protein-protein interactions.Advanced staining techniques are built upon a foundation of cell culture skills. Sterile technique while handling cells, media preparation, cell passaging, and cell counting using a hemocytometer, are all essential techniques for cell-based research. This project builds on these skills to produce illuminating fluorescent images of the cellular landscape.

Smothers, Jacob

Institution: *WV - West Virginia University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Jacob Smothers,
Rabina Basnet,
Andreas Baur,
Jessica Hoover

Abstract Name: **Site-Selective Nickel-Catalyzed C-H Nitration of 8-Amidoquinolines**

C-H functionalization reactions provide greater efficiency than many traditional methods of synthesizing compounds. These reactions are often capable of producing only one isomer or a small number of isomers in cases where traditional methods may have produced many isomers. Therefore, C-H functionalization reactions are essential to pharmaceutical engineering, agricultural chemistry, and materials science. C-H functionalization reactions also provide the possibility of limiting the amount of waste that is associated with the synthesis of compounds of vital importance to society. Previously, noble metals like palladium were primarily used by synthetic chemists due to the versatility of palladium as a catalyst for C-H functionalizations. Because palladium is rare and expensive, much recent focus has turned toward first-row transition metals. One such metal is nickel which is of interest because of its relative abundance and low cost compared to many noble metals such as rhodium, ruthenium, and palladium. Site-selective C-H functionalization reactions are often difficult to accomplish because of the possibility of functionalizing undesired C-H bonds when many are present within a molecule. In the case of 8-amidoquinolines, there are at least 6 C-H bonds that are open to functionalization; however, the nickel-catalyzed C-H functionalization reaction described in this poster only produces two isomers: 5-nitro-8-benzamidoquinoline (71% yield) and 7-nitro-8-benzamidoquinoline (20% yield). This poster will describe the development of this nickel-catalyzed C-H nitration reaction of 8-(N-quinolinyl)amides, as well as the selectivity observed in this reaction and the substrate scope of the reaction.

Snajkowski, Shaye

Institution: *GA - University of West Georgia*

Discipline: Chemistry/Materials Science

Author/Contributors:
Abigail Baker,
Shaye Snajkowski,
Megumi Fujita

Abstract Name: **A green chemistry project: catalytic reactions in supercritical carbon dioxide**

Green chemistry is a development and practice of environmentally friendly and safe ways to carry out chemical processes. “Greening” of the chemical industry can be achieved by adopting new alternative methods with less toxic materials involved, less wastes produced, less energy required, and altogether safe to humans and environment. One of the big challenges in the current chemical industry is the use of volatile organic solvents. Solvents are used to mix multiple reagents to react, and when the reaction is over, the solvent is removed by evaporation. This convenience comes with a price: the vapor easily escapes to the environment and causes air pollution. Furthermore, most volatile organic solvents are either flammable or toxic, or both, and is a hazard to workers. Supercritical carbon dioxide (scCO2) is a possible environmentally benign alternative to traditional organic solvents. ScCO2 is abundant in nature, non-toxic, and a renewable resource, unlike common organic solvents, which are mostly produced from non-renewable petroleum. CO2 is gas at a regular temperature and pressure, and a solid at a low temperature below -77 degrees Celsius (known as dry ice). When CO2 is placed under high pressure (1071 psi) and a moderate temperature above 31 degrees Celsius, it becomes a supercritical fluid. Supercritical fluid is dense like a liquid and can dissolve solutes, but it is also like a gas with low viscosity, which makes solutes move fast and collide to react efficiently. We are testing scCO2 as a reaction solvent for chemical reactions involving different types of catalysts: zeolites, immobilized enzymes, and homogeneous transition metal catalysts. We are examining whether the reactions catalyzed by these catalysts are as efficient in scCO2 as in traditional volatile organic solvents, or better, and whether scCO2 has effects on the selectivity of the reactions.

Sobieski, Adam

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **Biology**

Author/Contributors:
Kendal Watwood *Adam Sobieski* *Mark Putzer*
Joshua Bowers *Sydney Covert* *Kassidy Detvan*
Danielle Dolinac *Pedro Hrubecky* *Will Inghram*
Mariah Linse *Oliver Long* *Austin Skenadore*
Sam Troudt *Catherine Washak* *David Krause*

Abstract Name: **Physiological Changes in Dienococcus aquaticus During Long-Term Stationary Phase Under Carbon Source Availability Stress**

There is a complicated interaction between a bacterium and its environment driving adaptation. Usually, bacterial physiology is studied during the exponential phase, but investigations during the long-term stationary phase are not as well understood. Here, we followed two strains of Deinococcus aquaticus in the long-term stationary phase in low and high-nutrient environments. The evolutionary trajectory was assessed through surveillance of cell viability, colony morphology, genomic content, and protein content over 54 days at three time points. We predicted that nutrient depletion and waste accumulation in the flask environment would result in phenotypic variation. Interestingly, there was an environmental shift toward a basic pH. Despite the shift in pH, cultures remained viable after 54 days. Differences among strains were observed in generation time, pigmentation, and colony morphology, among other phenotypic and metabolic characteristics. Divergence in extracellular protease activity was also observed throughout the study. Significant variation between samples equally subjected to the same growth conditions suggested that D. aquaticusis capable of short-term evolution under resource-scarce conditions.Our findings suggest that further research to evaluate variation in proteins as a carbon source is warranted.

Sobottka, Devin

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Grace Cunningham,
Esam Alfalah,
Krysti Knoche Gupta

Abstract Name: **Student Organizations as a Means to Effectively Develop Safety Culture Within Undergraduate Chemistry**

Safety education for college-level chemistry labs can be adequate for minor incidents of broken glass and small spills, but the chemical industry and graduate programs are often under the scrutiny of environmental health and safety departments that have far more stringent requirements than an average undergraduate student will encounter. Students who graduate with a bachelor's in chemistry often find themselves with a job where chemical hygiene is practiced at a level they aren't used to. Considering the professional and personal implications that poor adherence to chemical safety can have, more could be done at the undergraduate level to develop the skills and mindset associated with chemical safety. The Chemistry Student Safety Team (CSST) is a student-led, mindset-focused organization working to foster a safety culture at UWEC. The CSST is mentored by UWEC faculty and the UMN-Twin Cities Joint Safety Team (JST). The CSST uses safety demonstrations, awareness campaigns, PPE sales, and safety themed merchandise to promote safety culture. To track attitudes in the UWEC department of chemistry, the CSST uses an annual safety survey along with a system to report near miss incidents anonymously. Student safety organizations at an undergraduate level are an innovative way to promote safety-culture through peer education. With faculty support, student-led safety organizations such as the CSST can be an integral part of disseminating safety information to other students within undergraduate chemistry programs. Involving students in education and safety initiatives at an undergraduate level can lead to more effective researchers, more productive employees, lower organizational costs, and a more safe and equitable learning environment.

Sofi, Theologia

Institution: *NY - Siena College*

Discipline: Education

Author/Contributors:
Mouda Al Zaydan,
Theologia Sofi

Abstract Name: **The Excellence Capsule (NExT)**

Transformational leadership is a leadership style that can inform our high-impact educational practices by serving as a better capacity builder for students. Inspiring positive changes in those who follow, transformational leaders are generally energetic, enthusiastic, and passionate. Not only are these leaders concerned and involved in the process, but they are also focused on helping every member of the group succeed. The Nonprofit Excellence and Transformation (NExT) Program makes for a great capacity-building opportunity by focusing on the progression of professional development. We hypothesize that the NExT program serves as an excellence capsule not only for the non-profit organizations that they partner with but for the student by expanding their knowledge, professional skills, and cultural awareness, through a gradual process that prepares them for their next step in the real world.

Solaiyappan, Sid

Institution: *CA - Irvine Valley College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sid Solaiyappan

Abstract Name: **Utilizing Machine Learning algorithms trained on Recent Music-Listening Activity in Predicting Big Five Personality Traits: A Novel On-going Investigation**

Music has been important to everyday life since long before modern civilization and has been a subject of study for many years. It has been known to be a positive predictor of personality traits due to the individuality of personal preference. These personality metrics are typically evaluated using a Big 5 trait inventory that measures personality into 5 categories: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The study will attempt to assess the prediction quality of an individual's Big Five personality traits from a week worth of recent participant music listening activity from the Spotify Application Programming Interface using machine learning (ML). The created dataset will allow for correlating each of the 5 Ten Item Personality Inventory dimensions with music genres, artists, year, beats per minute, energy, danceability, loudness, length, acoustic, popularity, and other features in a vector. The dataset will be standardized and used to train on ML models such as Random Forest, Decision Tree, K-Nearest Neighbors, Logistic Regression, Support Vector Machine, etc. Prediction accuracy will be compared to previous works. Metrics include accuracy, FPR, TPR, and ROC/AUC scores. Both regression (continuous numeric value) and classification (Likert scale) will be used. A full literature review showed this is the first study to use both Spotify API data, rather than self-reported music preference, and ML classification, rather than traditional statistical tests and regression models, to predict the personality of a college student demographic. Applications of this study include custom advertisement recommendations and music therapy. Approval has been granted to administer the survey by Irvine Valley College's Institutional Review Board.

Soletski, Larkyn

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Dane Nelson,
Larkyn Soletski,
Jennifer Muehlenkamp

Abstract Name: **Patient Satisfaction for Suicide Care in the Emergency Department**

Self-inflicted injuries continue to be major public health concerns in the United States with 312,000 related emergency department visits in 2018 (CDC, 2022). Patients with self-inflicted injuries often report to the emergency department to seek help, where staff must accurately assess the patient's lethality and manage their care. Admitted patients for self-inflicted injuries present variation in satisfaction across departments. Satisfaction is commonly rated lower in the emergency department compared to other units where they may have received care. (Hutchison, Brian et al., 2003). Patients who receive poor care during this time are not only more likely to report lower satisfaction but also may leave with an increased level of risk. The purpose of this study is to compare responses on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) of patients visiting the emergency department with self-inflicted injuries to patients visiting the emergency department without self-inflicted injuries. Permission to access the deidentified data from patients presenting to a local hospital emergency department between January 2021-December 2022 has been granted and we are awaiting the data. Continuous satisfaction variables will be analyzed using independent sample t-tests and Chi-Square analyses for Categorical Data. We expect patients who visit the emergency department with self-inflicted injuries to report less satisfaction on the HCAHPS than patients who visit the emergency department with other injuries. Implications of the results will be presented and shared with the selected hospital emergency department to guide care quality improvements.
Acknowledgements

Soliday, Delaney

Institution: *VA - George Mason University*

Discipline: Political Science

Author/Contributors:
Delaney Soliday

Abstract Name: **Breaking the Walls: Mapping the Islamic State's Use of Recruitment by Force**

This project analyzes the impact of Islamic State (IS) recruitment on vulnerable Syrian communities. Jihadi groups frequently use prison breaks and attacks on camps for internally displaced persons (IDPs) to free detained fighters and recruit new members en masse. The Islamic State's use of the tactic I refer to as 'recruitment by force' has been widely documented in open-source media and news reporting, but understudied in an academic context. Recent major attacks include the battle at Al-Hasakah prison from January 20-30, 2022, that freed thousands of IS prisoners(Seldin and Civiroglu 2022), the attack on Kuje Prison in Nigeria that freed over 900 inmates(Adetayo 2022), and the attempted suicide attack on al-Hol on September 22, 2022(Liebermann and Starr 2022). Since the IS's defeat at Baghouz in 2019, the group has been shifting its operational focus from the Middle East to sub-Saharan Africa, meaning that a solid understanding of the ways in which the group acquires new recruits by force is key to maintaining robust counterterrorism capabilities (Bacon, Doctor, and Warner 2022). This work examines how the Islamic State's use of prison breaks has changed diachronically and geographically since October 2006. This research aims to map the IS's attacks on prisons, detention centers, and IDP camps over the past 16 years and analyze how the group targets vulnerable communities to recruit in larger numbers. In this case study, I will: (1) use spatial analysis techniques to identify trends in attack distribution, (2) use discourse analysis to analyze the way the Islamic State talks about targeting specific locations in its primary source material, and (3) use quantitative analysis to identify new relationships between the project's original dataset and existing data on Islamic State attacks and displaced Syrian communities.

Solomon, Chase

Institution: *NC - Elon University*

Discipline: Biology

Author/Contributors:
Chase Solomon

Abstract Name: **Differences in DNA Damage due to Reactive Oxygen Species in Hybrid Lizards**

Hybridization can occur between some species but may lead to reduced fitness in hybrids. Reduced fitness may result from decreased mitochondrial function in the hybrid offspring. Analysis of mitochondrial function found that hybrids of the lizards Urosaurus graciosus and Urosaurus ornatus have increased ATP production rates. This can have negative effects because of increased reactive oxygen species (ROS) production. Hybrid lizards appear to maintain reproductive fitness despite having dysfunctional mitochondria; however, the underlying biological mechanism is unknown. The purpose of this study was to assess the difference in DNA damage due to ROS for the liver tissue in the two parental types and their hybrids. Hybrid lizards should have the least amount of DNA damage because previous research found an increased melanin content in their liver tissue, which can act to absorb ROS. Comet assays were used to assess DNA damage. Isolated liver tissue cells were treated with hydrogen peroxide (H2O2). DNA damage was visualized after 1 hour of single-cell electrophoresis. Images of DNA damage were analyzed using OpenComet. Each liver tissue sample resulted in analysis of roughly 1,000 cells. DNA tail percentage, tail moment, and olive moment were measured for the control, 1/50, 1/100, and 1/1,000 dilutions of H2O2. Hybrid tissue showed significantly higher damage (0.01) for DNA tail percentage, tail moment, and olive moment when compared to U. graciosus and U. ornatus. There was no significant difference between the two parental species. Despite tending to have increased melanin content in their liver, hybrid DNA is not as well protected from ROS as each of the parental lizard species. These results indicated that hybrid lizards may not be able to deal with oxidative stress as well as either parent species.

Solomon, Norman

Institution: *VA - Virginia Tech*

Discipline: Biology

Author/Contributors:
Norman Solomon,
Aaron Hamrick,
Stephanie Rollmann,
John Layne

Abstract Name: **A Loss of Pb2 Sensilla Across Cactophilic Drosophila Species?**

Olfaction is a primary sensory modality used by insects for identifying host plants. Shifts in host plant use can result in changes in the insect olfactory system. These can take the form of changes in sensitivity of individual primary sensory neurons, and/or a gain/loss of these neurons. The present study documents changes in the olfactory system of the Drosophila repleta group that accompany shifts in host cactus species. A previous study found no evidence for one of the three expected sensillar subtypes, the maxillary palp basiconic 2 (pb2) subtype, in 3 of the 12 repleta species measured, based on recordings of individual olfactory sensory neurons. Given that this lack of evidence may have resulted from a simple failure to locate existing single sensillae, we recorded global responses of populations of neurons in the maxillary palps to odors diagnostic for each sensillar subtype. Included were the three Drosophila species with putative sensillar loss, plus a Drosophila species known to have all three sensillar subtypes (positive control). Results reveal the presence of pb1 and pb3 sensillar subtypes in all four of these species. However, no responses to odorants diagnostic for pb2 sensilla were found in the three species hypothesized to lack this sensillar subtype, which is consistent with previous work on single sensillae.

Song, Siwon

Institution: *WI - University of Wisconsin-Superior*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Siwon Song

Abstract Name: **Connect-4 via Min-Max algorithm and Monte Carlo Tree Search**

Games have been around people for a long time. As study in machine learning is proceeded, unbeatable programs are frequently observed such as AlphaGo. AlphaGo is a computer program that plays a board game called GO, developed by DeepMind Technologies in Google and implemented with reinforcement learning. Reinforcement learning is the area of machine learning which focuses on computer algorithms that can improve automatically through experience and data by computer itself such as self-driving robots/pilots and search engines. The objective of the research is to implement reinforcement learning algorithms into a program which plays connect-4 and enable it to make the best move by learning itself. There are two algorithms implemented: Min-Max Algorithm and Monte Carlo Tree Search (MCTS). Min-Max Algorithm is an algorithm that finds all possible cases and makes a winning move while MCTS is a major component of AlphaGo algorithms that simulates a lot of random games, evaluates every move, and makes a winning move. However, due to countless number of cases Min-Max Algorithm can find, NegaMax Algorithm is implemented which simplifies the Min-Max Algorithm; additionally, a limit on the number of recursions is set. Also, The MCTS algorithm's winning ability is controlled by how many simulations it performs before picking a move. The further step is to build a 6x7 grid of connect-4 board using Python, create 3 players: RandomPlayer, NegaMaxPlayer, and MCTSPlayer which use the specified strategy. After simulating hundreds of battles among the 3 players, the data shows that the larger upper bound of NegaMax, the stronger move it makes, the more simulations in MCTS, the stronger move it makes. Whether MCTS is stronger than Negamax depends on the two hyperparameters.

Song, Yinan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Yinan Song *Ning Su* *Tan Jiao*

Abstract Name: **Exploring The Impact Of Educational Exchange Activities Between UWEC And CIT Project**

With the development of educational internationalization, more and more Chinese students choose to study abroad. While ample studies discuss international students, less research examines exchange programs. To better understand the impact of exchange activities on international students and scholars, this case study explored the positive experiences and challenges faced by students and exchange scholars in the University of Wisconsin Eau-Claire (UWEC) and Changshu Institute of Technology (CIT) 1+2+1 program.The research team adopted surveys and interviewers to collect data from exchange students, visiting scholars, and administrative personnel. The results revealed both external and internal factors that accounted for the participants' experience, such as students' perceptions of values in speaking up, sense of fitting in, and the importance/lack of a multilingual classroom environment. The participants shed light on gender, identity, language, culture, education, and communication style. Additionally, results showed that the study abroad experiences influenced students' networking with diverse friends and a better understanding of their own cultural values and prejudices. This project aims to offer implications for future exchange programs between Chinese and American universities, advocate for thoughtful and mutually beneficial cross-cultural communication, as well as offering suggestions for exchange students.What made this research project distinctive and meaningful was that the entire research team consisted of international students and a faculty mentor from China. Both the topic of the project and the background of the researchers represent an effort to promote equity, diversity, and inclusion locally and globally. The research team was able to bring in an authentic, culture-relative, and empathetic lens to examine the gains and challenges experienced by the participants. This project hopes to inspire more international students to engage in faculty-student research experience, enhance their professional and career skills, and amplify their voices.

Sorial, Caroline

Institution: *FL - University of Central Florida*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Caroline Sorial,
Lakshmi Kollara

Abstract Name: **An Examination of the Vocal Tract Dimensions in Children with 22q11.2 Deletion Syndrome**

22q11.2 Deletion Syndrome (22q) is the most common microdeletion known in humans. Individuals with 22q have an increased risk for the development of speech and language impairment such as hypernasal speech and nasal regurgitation during swallowing. Adequate functionality of the vocal tract (VT), which is bounded superiorly by the posterior nasal spine and inferiorly by the base of the epiglottis, is required for normal vocal production since the shape of the VT determines articulatory possibilities. Irregular vocal tract dimensions, such as a wider pharynx, can lead to inadequate velopharyngeal closure (Titze, 2001). No studies to date have analyzed the VT volume in a non-sedated pediatric population with 22q. Thus, the aim of this study was to investigate the relationship of the volumetric VT measures and resonance disorders among children with 22q using a novel, non-sedated 3D imaging protocol.MRI data were obtained on 30 participants (4-12 years old), 15 with a confirmed diagnosis of 22q and 15 control subjects. 3D MRI data were collected while the velum was relaxed as the participants lay in the supine position. The 3D scan involved a 0.8 in-plane isotropic resolution with an acquisition time of less than 5 minutes. MRI data were transferred into Amira 6 Visualization Volume Modeling software (Visage Imaging GmbH, Berlin, Germany). Linear measurements were taken of the pharyngeal depth. Volumetric measurements of the adenoid volume (AV) and VT were also examined. Two sample t-tests were used to assess differences between the control and clinical groups.Preliminary results indicate that VT port dimensions are significantly different in children with 22q compared to the non-syndromic group (.05). This syndrome-specific quantitative anatomical data in children with 22q can be used to tailor surgery to provide a more personalized treatment approach to enhance speech and surgical outcomes in the 22q population.

Soriano, Emilio

Institution: *AR - Arkansas State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Emilio Soriano Chavez,
Dilynn Strickland,
Yuto Morishita

Abstract Name: **String in Switch ? Usage Analysis and Maintainability**

The release of Java 7 in 2011 introduced the capability of using character sequences, hereby referred to as String objects, in switch expressions and their corresponding case statements. This String in Switch language feature allows producing readable and better-performing code when compared to commonly used alternatives like if-else statements, often nested and difficult to modify and maintain. As a consequence, code maintainability can be simplified by incorporating this feature into a project. Our research focuses on the usability analysis of this new language feature, with the goal of observing its usage over time across selected Java-based open source projects. In addition, we perform a comparative analysis between sample String in Switch statements and equivalent if-else expressions to discuss the maintainability of the code as it relates to the advantages of String in Switch. For analyzing a project, we perform a file expansion that generates revisions for every commit in the project's repository. Subsequently, we build Abstract Syntax Trees (ASTs), allowing us to identify the presence of String in Switch statements present in a target file. With this information, usage-over-time plots are derived, allowing us to observe the occurrence of String objects in switch expressions throughout a project's development history. Of the analyzed projects, our research shows that the String in Switch feature is not widely used, despite its capability of generating cleaner and readable code. We conclude that some of the analyzed projects may be mature, which reduces the need to rewrite functional code into equivalent String in Switch statements. These findings are useful not only for programming language designers in understanding the tendency to utilize new features, but also for instructors in teaching programming languages in a limited amount of time.

Soriano, Nydia

Institution: ***AR - John Brown University***

Discipline: International Studies

Author/Contributors:
Nydia Soriano

Abstract Name: The Humanitarian Crisis Due to Fast Fashion

In the United States of America, more than 97% of apparel that's sold is made somewhere overseas, according to the American Apparel; Footwear Association. Currently, the fast fashion industry is one of the fastest growing industries that continues to exploit their workers in order to maximize profits. International governments like China fail to properly monitor regulations due to the high profit these products bring. Brands like Shein continue to grow in sales but the product is created at the expense of long hours and little pay for workers, and environmental destruction. Creating discussions and pushing for change within our communities is the first step to create a better future for those outside of our borders. Implementing systems and spaces for slow fashion, an ethical way of shopping and distributing old clothes, and international labor laws can spread awareness for workers and the environment. Therefore, a survey will be sent out to students at John Brown University that will ask to evaluate their clothing decisions by choosing their favorite clothing items and listing what countries these clothing items are made in, brand, and where it was purchased. Information on well-known fashion brands and their impacts will be given with links at the end of the survey in hopes that the surveyed group may have an informed opinion on the fashion industry. These students, as consumers, are what keeps these corporations afloat and educating them of the crimes that are done for their money is critical. Consumer awareness is an integral step for the reformation of the current fast fashion industry. One step at a time, the implementation of domestic social change and international policy regulation can bring upon a future that no longer globally exploits garment workers to maximize profits.Keywords: Fast fashion, labor workers, slow fashion, multinational corporations

Sosale, Medhini

Institution: ***VA - George Mason University***

Discipline: Biology

Author/Contributors:
Medhini Sosale,
Nucharin Songsasen,
Osman Ibis,
Cody Edwards,
Henrique Figueiro,
Klaus-Peter Koepfli

Abstract Name: The complete mitochondrial genome of the Indochinese jackal (Canis aureus cruesemanni) and its relationship to other subspecies of golden jackal

The Indochinese jackal (Canis aureus cruesemanni) is a subspecies of the golden jackal (Canis aureus) found in Southeast Asia. While this species has been genetically studied in Europe, the Middle East, and India, current research is lacking on the population(s) in Southeast Asia. Using a genome skimming approach, we assembled the first complete mitochondrial genome for an Indochinese jackal from Thailand. The mitogenome contained 37 annotated genes and is 16,729 bps in length. Phylogenetic analysis with 21 additional canid mitogenomes, along with analyses of a cytochrome b gene-only data set, supports the Indochinese jackal as a distinct lineage, and therefore subspecies, among golden jackals.

Soto, Virginia

Institution: ***TX - San Jacinto College***

Discipline: Biology

Author/Contributors:
Virginia Soto,
Maxine Lane

Abstract Name: Variations in Microbial Populations in Metropolitan Houston Wetlands

In recent years, the number of chemical industries near bodies of water have increased and pose a threat to the environment and microorganisms within the water supply. In order to minimize the damage being done to the natural environment, restrictions have been set in place for how chemical industries dispose of waste. Houston has a multitude of chemical industries, which gives opportunity to study and monitor changes within the bodies of water near this metropolitan area. The microorganisms within the water can be an indicator of its quality. The foundation of this research is based off two areas within Armand Bayou Nature Center, a nature reserve that shares water with chemical plants within the Houston area. One area sampled was a pond within the nature reserve while the other was from the bayou which is in closer association with wastewater. The microbial diversity present in each water sample was explored to see differences between the two environments. Five prokaryotic microorganisms were obtained from each sample and testing was performed to show similarities and differences between the two ecosystems. This research is baseline sampling that can be used for future comparisons and collaborative work. The continuation of this study will broaden our knowledge of the relationship between the chemical industries and microbial diversity.

Sous, Sedra

Institution: ***TN - University of Memphis***

Discipline: Education

Author/Contributors:
Sedra Sous,
Jaime Sabel

Abstract Name: Investigating Undergraduate Students' Engagement in Systems Thinking Using Causal Maps

Undergraduate biology classes must prepare students to engage in an increasingly interdisciplinary field where they need a foundation of scientific understanding to make informed decisions about the science they will encounter in their careers and everyday lives. To study how undergraduate students engage in systems thinking, we conducted a pre-post study with students in an undergraduate botany course. Students were asked to complete a causal map at the beginning and end of the course. Students were also asked to answer two questions about their causal map: (1) Explain how your causal map demonstrates the relationships of plants and the environment? and (2) If someone, a non-scientist, asked you to explain how plants connect to everyday life or situations, how would you answer using your causal map?To evaluate the questions students answered, we used open coding to determine common topics among the answers. We also used the framework for systems thinking developed by Mehren et al. (2018) as utilized by Mambrey et al. (2019). This framework is defined by three stages. At Stage 1, students provided a vague level of understanding when comprehending the benefit of causal maps. At Stage 2, students made moderate connections between plants and the environment but did not elaborate with specific examples that would help them create broader connections. At Stage 3, students identified multiple different complex connections and identified specific examples. Ultimately, results showed that most students did not draw upon specific connections, but rather leaned more toward broad areas of connection.This work highlights the difficulties undergraduate students have with engaging in systems thinking but provides insight into areas in which students do engage in more complex thinking and areas in which we can target with intervention. As such, it will be of interest to NCUR attendees and the broader science education community.

Spader, Nicholas

Institution: *GA - Abraham Baldwin Agricultural College*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Nicholas Spader

Abstract Name: **Evaluation of cytotoxic and apoptotic effects of several regional plant-based extracts on human squamous cancer cell lines**

The south has always been a place where home remedies and scientific-based medicine go hand in hand. Throughout time, natives and other groups have used homemade salves and ointments for what could have potentially been carcinoma or other forms of skin cancers. Through literature study, certain plants of interest have been identified. Plants used in various assays were either grown in the ABAC greenhouse or collected from local areas. Two extracts of interest have been used in the application of cell cytotoxicity assays, cell proliferation assays, and a cellular invasion assay using skin cancer cell lines. The cytotoxicity assay demonstrated cytoprotective properties when applied to cells. The cell proliferation assay confirmed this observation by showing increased cellular proliferation in cells treated with the extracts. The wound healing assay demonstrated increased cellular invasion into an area of artificial damage. Overall, these extracts have been shown to demonstrate increased cell survival, increased cell proliferation, and increased cellular invasion when used to treat subcutaneous cancer cells in vitro. In summary, the extracts demonstrated a prosurvival phenotype indicative of enhanced wound healing.

Spaeth, Mary

Institution: *WI - University of Wisconsin-Stout*

Discipline: **FAN Abstract**

Author/Contributors:
Mary Spaeth

Abstract Name: **Catalyzing Creative Inquiry via Faculty Led Study Abroad: Entrepreneurship through the Arts**

Undergraduate students enter higher education with 12-14 years of formal education, generally prescriptive in nature. The creativity that children may have displayed in pre-school and elementary school has often been tempered by conformity. Rules, reified, often become the basis on which students learn and are assessed.Creative inquiry, necessary for the application, analysis, evaluation, and synthesis of research, can be catalyzed outside of traditional education environments. Research demonstrates that inquiry requires the disruption of 'comfortable' environments and the subsequent disruption of fixed mindsets.This presentation offers a faculty-led, study abroad course curriculum, sample itinerary, and tools designed to inspire students from across disciplines to encounter and thrive on ambiguity, stretch their ways of thinking, and inspire artistic creativity via a 3-week course to Scandinavia. The course is designed to increase research and presentation skills via real-world scaffolding that fosters a natural curiosity about their fields of study and enables them 1) to compare earlier learning with new experiences, 2) to formulate research questions based on new perceptions, and 3) to articulate their research aims and objectives with greater clarity. The students are predominantly from programs in the arts, industrial design, gamification, and business. The course is designed to support students who have begun or are about to begin their senior thesis and capstone projects. Vis-à-vis samples of student business journaling and evaluation survey data from this course led in 2019 and 2022, the presentation provides a case from which others can build their own faculty-led courses to strengthen creative inquiry and research readiness.Studying abroad increases creative and cognitive inquiry. The students in this program experience a breadth of activities that, in addition to the cultural dissimilarities with their home country, expose them to cross-curricular professional and academic environments that challenge their zones of comfort.

Speight, Noah

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Micah Merkel *Kyler Wurzer* *Logan Schultz*
Noah Speight *Bryce Knutson*

Abstract Name: Effects of Social Media

Social media has become one of the biggest aspects of our everyday lives. They allow us to share our lives with loved ones, research our interests, and expose ourselves to all kinds of new things. Due to how ubiquitous the sites are, they inevitably will have a profound effect on mental health. Existing literature shows that there are many ways that social media can affect people's lives. It shows that social media can affect people's health choices and personal lifestyle decisions. Research also shows that people tend to compare themselves to others more when using social media often, which can lead to a multitude of mental health and self-perception issues. This research focuses on mental health and social media use. Using a survey implemented to a diverse sample of individuals through various social media outlets, a wide variety of different trends emerged. The main focus of the research was to determine whether social media was linked to self-esteem. The research shows a wide variety of ways social media is affecting people's mental health and their assessments of their own physical and intellectual attributes.

Spoerl, Bianca

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Anna Berthiaume,
Bianca Spoerl

Abstract Name: Investigation of Cancer Biomarkers Using SERS

Surface Enhanced Raman spectroscopy (SERS) can be used to detect changes in the composition of human saliva that may indicate the presence of cancer biomarkers. Cancer is a prevalent disease that affects many people. By using SERS with human saliva, a painless and possibly more effective way to detect cancer can be created. Like blood, saliva can show changes in proteins and concentrations of certain molecules that occur due to cancer. The method that our group will focus on is SERS which is an extremely sensitive spectrophotometric method. This is necessary when using saliva samples as many analytes are in very low concentrations. Our group is still in the preliminary stages of using the Raman spectrophotometer and optimizing SERS conditions. Moving forward, our group hopes to successfully run treated saliva samples on the Raman.

Spolidoro, Lindsey

Institution: ***IA - Wartburg College***

Discipline: Biology

Author/Contributors:
Lindsey Spolidoro

Abstract Name: Analysis of LNS2 protein domain conservation through bioinformatic annotation of Lpin in Drosophila species

Evolutionary relationships between species of an organism can provide insight into how the genes within each organism have changed in structure in order to maintain function. At the same time, similarity between gene structure as seen through conservation can point to certain evolutionary relationships. The Genomic Education Partnership's (GEP) Pathways Project aims to use this concept to examine how the evolution of a gene's regulatory region relates to the position of the gene in a network. The Pathways Project focuses specifically on the gene network that regulates the insulin signaling pathway. The insulin signaling pathway is a good candidate for a model pathway to study because it is critical for growth and central metabolism. A pathway with this magnitude of importance maintains high conservation throughout evolution to an extent where slight changes in genetic structure can be mapped out over time, creating a potential for organizing the phylogeny of a group of species of an organism. One of the genes within the insulin signaling pathway is called Lipin, abbreviated as Lpin. In this study, Lpin was annotated in 25 different species of Drosophila to contribute to the GEP's Pathways Project. Lpin is a gene that encodes for a protein that works as a phosphatidate phosphatase to aid in fat body function and energy metabolism in the insulin regulatory pathway. It is hypothesized to have one functional domain, the LNS2 domain. The Lpin annotations were compared between distantly related species in order to identify conserved functional domains. These conserved domains were then compared to computational predictions of the LNS2 domain. The annotations supported one computational prediction, suggesting that conservation between species may improve the predictions of functional domains.

Sprague, Natalie

Institution: ***PA - Millersville University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ajoy Kumar

Abstract Name: The State of Dissolved Oxygen in the Longhurst Ecological Provinces

The purpose of this study is to determine the current state of dissolved oxygen in regions defined by the Longhurst Ecological Provinces and compare those results to dissolved oxygen measurements as early as 1965. Dissolved oxygen is an important variable to consider when assessing the conditions of an ecosystem. Therefore, a comprehensive study of the state of dissolved oxygen in the world's oceans is important to understanding the physical and biological processes occurring in each region. Specifically, it can reveal how physical processes, such as mixing, climate change, and upwelling, can affect primary production and the ecosystem as whole. A part of this study is to also compare dissolved oxygen concentrations to chlorophyll-a concentrations to investigate the relationship between dissolved oxygen and primary production in each Longhurst Province. This study uses dissolved oxygen data from biogeochemical Argo floats and the World Ocean Database in the Longhurst Ecological Provinces. Chlorophyll-a, temperature, salinity, and potential density are other factors that were considered when analyzing the state of dissolved oxygen. The findings are that in many of the provinces studied, the trends in dissolved oxygen are not consistent with previously observed concentrations, and there is a direct relationship between dissolved oxygen concentrations and chlorophyll-a concentrations.

Springer, Ashley

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Music

Author/Contributors:
Ashley Springer

Abstract Name: A Glimpse Into the Romantic Era: Henryk Wieniawski's "Romance"

The Romantic Era is a musical movement lasting between the years of 1820 and 1900. Composers of this era utilized music as a means of individual, emotional expression, incorporating longer, more heartfelt melodies, a broader usage of dynamic contrasts, and more intense passion within their works than in previous years. Many composers drew influences from art, literature, love, death, and war in composing their works. Henryk Wieniawski, a Polish composer, pedagogue, and violin virtuoso, was a prominent figure during this time period. During his lifetime, Wieniawski composed over fifty works for solo instrumentalists and ensembles and was considered, by critics, the reincarnation of violin virtuoso Niccolò Paganini for his impeccable technique and performance skills. Wieniawski's Violin Concerto No. 2 in D minor, Op. 22, is highly regarded today as both a staple piece of solo violin repertoire and as one of the most popular Romantic Era violin concertos, notable for its colorful and passionate melodies and harmonies. The second movement of this work, Romance, is gentle and flowing, yet its central climax is fervent and intense, demanding the full attention of the audience and of the solo performer alike. The movement's repeating melody is presented in a simple 12/8 time, changing tonic pitch at various points throughout to emphasize the movement's melodic contour and to provide a contrast to the listener's ear. For the soloist, paying attention to the movement's intricate melodies and articulations is crucial for how it is performed, and, more importantly, for how the movement's intended message is conveyed. Usages of intense vibrato, legato bow strokes, and an awareness of the sounding point between the bow and the string are crucial for the soloist. From its main theme to its utilized techniques, Wieniawski's Romance provides a glimpse into the central ideas and characteristics of the Romantic Era.

Sprouse, Garrett

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alex Hornung,
Garrett Sprouse,
Jayden Trocke

Abstract Name: Simulation of the Shear Flow Dynamics of Suspended Microscale Particles

Understanding the shear flow dynamics and wall interactions of non-spherical particles suspended in fluid media is important in a number of fields, from large scale phenomena like coastal erosion to mesoscopic and microscale applications such as additive manufacturing with fiber-reinforced composite filaments and shape-based separation of particles and biologicals.In particular,focusing on the geometric orientations of high-aspect ratio fiber-like particles suspended in low- and high-viscosity fluids transported through precision engineered pores with radially asymmetric geometries. This includes usinga combination of analytical methods and numerical simulations withcomputational fluid dynamics solvers ANSYS Fluent and STAR CCM+ to evaluate the ability of customized microscale pores with tapered sidewalls to orient and align fibers suspended in fluid media. We believe these results to also provide valuable insights into nanoscale applications such as the wafer-scale printing of aligned carbon nanotubes for microelectronic circuits.

Srinivasa-Narasimhan, Sandhya

Institution: ***TX - Southern Methodist University***

Discipline: Education

Author/Contributors:
Sandhya Srinivasa-Narasimhan

Abstract Name: Activating Learning in Out-of-School Youth Science & Engineering Programs: Activation Lab Survey Findings

According to the U.S. National Science Foundation 2022-2026 Strategic Plan, as globalization and knowledge-based economies grow, scientific and technological innovations become increasingly important and thus enhance the importance of STEM education opportunities. Since 2019, the Caruth Institute of Engineering Education (CIEE) has offered a variety of week-long engineering summer camps to students. The camps are grouped by grade levels (7th& 8th, 9th&10th, 11th&12th), gender (all girls, all boys, co-ed), tuition-based, scholarship, and residential options. In addition, the CIEE began offering camps to 5thand 6thgraders in 2022. The Institute offers Hamon Foundation camps for underrepresented and underserved youth in South Dallas, e.g., Jubilee Park Community Center, and West Dallas, e.g., Voice of Hope Ministries. The types of engineering activities over the years have included designing an irrigation system, designing, and building a wind turbine, a pollinator house, a water filter, and solar ovens. To assess learning and engagement, the CIEE utilizes the STEM Learning Activation Survey, developed by Rena Dorph, MatthewCannady, and ChristianSchunn, as apreand post-camp to measure the interests, confidence, scientific sensemaking, and emerging identities in STEM disciplines. The STEM Learning Activation Lab/Survey has prompts that assess individual's responses across four dimensions of science learning activation: Fascination, Values, Competency Beliefs, and Innovation Stance. The presentation will present a factor analysis that examines connections across these four dimensions as well as a discussion of findings examining correlations with other factors such as age, gender, socioeconomic status, and the domain/contexts of science and engineering that framed the activities the campers completed.

Srivastava, Ashish

Institution: ***CO - University of Colorado at Boulder***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Aditya Vepa *Gesse Roure* *Robert Davis*

Abstract Name: Experimental and Computational Analyses of Drop Motion in Straight Microchannels

Droplet-based microfluidic systems have become quite prevalent in recent years, especially so for applications such as lab-on-chip systems, single cell assays, and high-throughput microreactors. Such systems often take the form of straight segments with rectangular cross-sections, which is the focus of this investigation. Studying the motion and deformation of droplets travelling through straight microchannels allows for more informed design of such systems. It is important to quantify how physical and geometrical parameters such as the capillary number (Ca), viscosity ratio (λ), drop size, and channel geometry affect the motion of a droplet flowing through a straight, rectangular microfluidic channel. This investigation leveraged numerical simulations and experiments to study the motion of droplets. Typically, viscous droplets are quite computationally intensive to simulate, so our simulations utilize a boundary-integral algorithm coupled with a moving-frame method to efficiently simulate a droplet's motion with given physical parameters (droplet size, viscosity, etc.). Through our simulations, we have found that increasing the Ca results in a faster and more deformable droplet, whereas increasing λ results in a slower droplet. Our simulations are verified through the use of an experimental flow-cell setup, which we've scaled up to a macroscopic scale for ease of visualization. We've scaled up the flow-cell in such a way that all relevant nondimensional parameters are preserved, and so we can witness microfluidic, low-Re, laminar flow at a scale which can be imaged with a cell phone camera. The experimental data are analyzed using computer-vision algorithms and postprocessing to quantify droplet trajectories, centroid motion, and tail deformation; our initial results have shown promising qualitative agreement with our simulations.

St. John, Colten

Institution: ***UT - Weber State University***

Discipline: Public Health

Author/Contributors:
Jordan Brown,
Colten St. John,
Joshua Clawson

Abstract Name: Preventing Adherence of Candida spp. with Pre-Therapeutic Drug - Filastatin

Candida yeasts are the most common human fungal pathogens. These primarily opportunistic pathogens can infect a variety of tissues and cause a variety of infections. They are also a common cause of healthcare-associated infections (HAI) in immunocompromised individuals. Candida yeasts usually form biofilms upon adhesion, which then increases their pathogenicity due to their lack of response to conventional treatment. Candida auris is an emerging fungal pathogen with nearly a 57% mortality rate. Filastatin is a drug not yet approved for human use but has been found to uniquely inhibit adhesion of C. albicans to the surface of several biomaterials and human cells. This study will assess if Filastatin is also able to inhibit the adhesion of three other pathogenic Candida species, C. albicans, C. glabrata, and C. auris. 96 well polystyrene microtiter plates will be used to assess the inhibition of fungal adhesion using various concentrations of Filastatin. After incubation, cells grown in the wells will be stained with either crystal violet, (or alamar blue to test for viability as well). Upon washing the plate with ice water several times to clear out stained cells that didn't adhere to the surface, methanol will be added to each well and allowed to sit for 45 minutes. The solution of methanol and stained cells will then be read by a spectrophotometer at 590 nm for the varying absorbances and will be compared to our control of both saline and Candida albicans. This will be beneficial to the future of healthcare as it will allow the number of infections with Candida species to be decreased. Future medical devices coated in Filastatin would be more resistant to Candida biofilm formation and would therefore limit the number of infections and mortality.

St.Pierre, Madelyn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Education

Author/Contributors:
Madelyn St.Pierre,
Dylan Baker,
Maria Cruciani

Abstract Name: Introduction and Progression of Early Algebra in the Beast Academy Comprehensive Curriculum

As students progress through elementary mathematics curricula, arithmetic is the main point of focus. However, a call for algebra to become a component of the elementary mathematics curriculum has gained momentum because implementing algebra in early elementary curricula increases student understanding of algebraic concepts and eases the transition to deductive algebra later in mathematics. The Beast Academy comprehensive curriculum was developed with a focus on problem solving through monster characters in a graphic novel who demonstrate different ways of mathematical thinking. Beast Academy incorporates problems where students engage with algebraic thinking earlier than suggested in the Common Core State Standards and continues to incorporate problems which emphasize algebraic thinking through practice problems in subsequent levels. This progression introduces students to algebraic language while enhancing their current learning. We are interested in the trajectory of problems which build algebraic thinking as well as problems in which students are doing algebra. We will present our findings on how this curriculum introduces algebra to students, and how current literature suggests this will impact student learning outcomes.

Stabile, Haley

Institution: ***PA - Allegheny College***

Discipline: Biology

Author/Contributors:
Haley Stabile,
Tricia Humphreys

Abstract Name: Duration of Haemophilus ducreyi Viability Following Transmission by Musca domestica

Haemophilus ducreyi is well known as the causative agent of chancroid, a sexually-transmitted disease that causes painful genital ulcers. In recent years, the bacterium has also been identified as the causative agent of non-genital cutaneous ulcers, primarily affecting children of the South Pacific Islands. While much is still unknown about the transmission of H. ducreyi in this setting, H. ducreyi DNA has been detected on flies in an endemic region. This experiment utilizes Musca domestica, the common house fly, as a model system to demonstrate that flies are a potential vector for the transmission of viable H. ducreyi. Utilizing a green fluorescent protein (GFP)-tagged strain of H. ducreyi, this study examines the time period in which H. ducreyi cells are able to survive after transmission by M. domestica. We found that 85.45% ± 28.41% of flies transmitted viable H. ducreyi. Additionally, the duration of H. ducreyi viability was found to be directly related to the bacterial concentration, and the majority of experimental plates had undetectable levels of H. ducreyi within one hour of initial exposure. This study demonstrates for the first time that house flies are capable of mechanically transmitting live H. ducreyi, potentially leading to advanced prevention and treatment methods for skin-ulcerative diseases within the South Pacific Islands.

Stackis, Melia

Institution: ***IA - Iowa State University***

Discipline: Public Health

Author/Contributors:
Melia Stackis

Abstract Name: Exploring the Knowledge, Attitude, and Practice of Storytelling and Reading on Child Wellbeing Amongst Teen Mothers in Kamuli District, Uganda

Children in Sub-Sahara Africa are faced with a greater risk for various emotional, psychological, and health challenges, contributing to their wellbeing, and because of conditions associated with poverty, children are not meeting their developmental potential. The young population in Sub-Sahara Africa, particularly Uganda, is booming, especially given that the COVID-19 pandemic and two-year school lockdown brought an alarming rise in teen pregnancy. As the young population grows, children's quality of life needs to be prioritized.Stories can be important for child development because they can preserve and transmit culture. The connection between reading or storytelling and child wellbeing has been studied but not as frequently in remote regions such as Uganda. In this study, the author gathered primary data from 30 teen mothers in Kamuli District, Uganda, regarding the knowledge, attitude, and practice of verbal storytelling and childcare. Data is further analyzed using descriptive statistics, including percentage distribution, mean, and frequency counts. Additionally, the author performed a literature review assessing the effect storytelling and reading have on child wellbeing to support their research.Children need to read and listen to stories because stories are ways beliefs and community customs are transferred throughout generations. Stories are a means of communication, generate catharsis, and help enhance verbal proficiency. Thus, resulting in reduced anxiety, higher self-esteem, and the skills to accurately express one's thoughts and feelings.This evidence is relevant to the Kamuli District community to emphasize the importance of sharing stories with their children. Further, this study can act as a resource for other researchers to develop strategies to help the youth of Uganda achieve higher wellbeing through storytelling and reading. With a growing young population in Uganda, there will be greater stress on developing and preserving future children's wellbeing.

Staehler, Kira

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
Kira Staehler

Abstract Name: **Search for Antibiotic-Producing Genes in Pseudomonas chlororaphis**

This research is being conducted to try and find new antibiotics. Bacteria mutate constantly and as a result, become resistant to antibiotics, causing a need for new antibiotics. Soil bacteria is a rich source of antibiotics. Many antibiotics that have been isolated from soil bacteria are used as the chemical backbone to produce many different synthetic and semi-synthetic antibiotics. We isolated an antibiotic-producing bacterium from soil in southern Wisconsin. The bacterium was identified as Pseudomonas chlororaphis, which produces a distinctive orange pigment. Our research found a possible link between the orange pigment and antibiotic activity. Other labs have found a link between the orange pigment and phenazine activity. This led us to think that there is a link between phenazines and antibiotic production. We sequenced part of the phenazine pathway genome in order to make primers to knockout out genes within the phenazine pathway. Interestingly, it was found that one of the genes that is in common strains of P. chlororaphis was not found in our specific strain. In order to better understand how phenazines are related to antibiotic production, we plan to target P. chlororaphis genes to be knocked out to determine the source of antibiotic production.

Stalica, Alexander

Institution: *NY - SUNY Brockport*

Discipline: Computer Science/Information Systems

Author/Contributors:
Alexander Stalica

Abstract Name: **Developing a Mice Detector Using Deep Learning Models**

Problem; Background:Micepresent many hazards within buildings. They are known to spread many diseases, through their excrements. Rodents can also cause structural damage to buildings. They can nest by chewing through insulation or they can chew through electrical wires which can cause fire hazards. Due to this, it is critical to inspect the rodent population in a given building to prevent such hazards from being present. However, manual rodent inspections can be difficult and potentially dangerous.Method:A custom object detector implemented in a python program can provide a psolution to this problem. An object detector based on deep learning models such as Faster Region-based Convolutional Neural Network (Faster RCNN) and YOLO framework can be trained to detect miceusing manually annotated images gathered from the open source. The detector can then be evaluated using the intersection-over-union formula, which shows how accurate the detector is. Once it is thoroughly trained and proper accuracy is reached, the detector can be run on a real-time system obtained from a raspberry pi equipped with a camera module. That is, this detects the presence of mice in a real-time model. The detector can then be programmed to send alerts to a user's device, informing them of the presence of rodents. In addition to this, at the time of detection, the program can record the rodent for the user to view and verify that there are indeed rodents present.Goal:The end goal of this project would be to develop an accurate, real-time mice detector, that alerts the user when mice have been detected. This detector can then be placed in a false ceiling environment where mice infestation is suspected, removing the need to investigate the area manually. The mice detector would save time and money while preventing potential accidents from occurring.

Stanislawski, Holly

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Nursing/Health Science

Author/Contributors:
Christina Forman,
Holly Stanislawski

Abstract Name: Preventing NicoTEEN Addiction Through Nurse-Led Education on Vaping

The aim of this research project is to develop, present, and evaluate an educational intervention on electronic cigarettes (e-cigarettes) and vaping for non-school staff adults who have influence on adolescents, such as coaches, counselors, and parents. TheU.S.Surgeon Generalreported that the use of e-cigarettes continues to be a public health concern among adolescents. Additionally, according to the Centers for Disease Control, there is evidence that adolescents who use e-cigarettes are more likely to smoke regular cigarettes in the future. While there is a growing body of research on the short and long-term health effects associated with e-cigarettes and vaping, less is known about how we might best prevent adolescents from engaging in use of these products. This project targets adults that spend large amounts of time with adolescents and have the ability to influence them on the dangers of e-cigarettes and vaping. It involves the delivery of an interactive and evidence-informed presentation. The efficacy of the intervention is then studied by comparing pre- and post-test results. Results are forthcoming, but it is predicted that the educational intervention would improve participants' knowledge about vaping and e-cigarettes.

Stanko, David

Institution: ***WA - Seattle University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Wan Bae *Linh Le* *Angelo Alfonso*
David Stanko

Abstract Name: Improving the Classification Performance on Small-Sized and Imbalanced Datasets

Predicting rare but high-impact events is critical in many medical applications, such as health risk prediction and disease diagnosis. While sensor technology has improved rapidly in the last decade, machine learning (ML) techniques for the prediction of rare events lag behind general prediction models.Most optimization techniques used to train ML models implicitly assume a balanced distribution of events in training data. This research focuses on improving the performance of classifiers on imbalanced and small-sized individual asthma patient datasets using oversampling techniques, as these issues significantly affect medical datasets in healthcare applications.Imbalanced data causes the classifier to be biased toward the class with more data samples (the majority class), reducing its accuracy for minority class data. The class imbalance problem is particularly challenging in the medical domain because the goal is to predict whether a patient is at risk for a particular disease. However, these cases are often in the minority class. Moreover, machine learning-based classifiers require a large amount of data to be adequately trained. Therefore, having a small-sized training dataset is also an obstacle because it hinders the classifier's performance.To improve the performance of prediction models on imbalanced and small-sized asthma patient data, we first investigated existing synthetic minority oversampling technique (SMOTE) variants at the data level. SMOTE variants solve the class imbalance problem by generating synthetic data samples and adding them to the minority class data until the classes are balanced. We proposed three new minority oversampling techniques: Incremental K-Means Clustering (IKC), SMOTEBoost and SMOTEBoost with Control Coefficient (SMOTEBoost and SMOTEBoostCC), and Average Neighbor Vector Oversampling (ANVO). We evaluated the effectiveness of the proposed techniques compared to the existing SMOTE variants. The evaluation results show that the proposed methods are comparable with state-of-the-art oversampling methods.

Starr, Madelyn

Institution: *NC - Elon University*

Discipline: **International Studies**

Author/Contributors:
Maddy Starr

Abstract Name: **Material Memories: Narratives of the Israeli/Palestinian Conflict**

Since the establishment of the State of Israel and the catastrophe of the Nakba, which entailed the mass displacement of thousands of Palestinians in 1948, the Israeli/Palestinian conflict has dominated global headlines and shaped foreign policy throughout the Middle East and North Africa. The state of constant tension and mutual distrust that has characterized Israel/Palestine since 1948 has also occasionally erupted in violent conflicts. Both Israelis and Palestinians tend to perceive themselves as victims of violence and the other as perpetrators of the conflict, thus mutually enforcing an “us versus them” environment. While the conflict gains significant traction on the world stage during periods of heightened physical violence and war, less attention has been paid to how Israelis and Palestinians experience the conflict on an everyday basis. Likewise, there has been little attention paid to the material memories and realities of the conflict, including how recurring interactions with objects and images allow Israelis and Palestinians to remember narratives of the near and distant past and inspire mutual distrust, structural violence, and resistance to the current state. During five weeks of ethnographic research in Jerusalem, I explored how memory informs the pervasive tension, structural violence, and resistance of ordinary Israelis and Palestinians. My project asked: How do ordinary Israelis and Palestinians narrativize their experiences of the conflict, and how do everyday objects embody these narratives? Drawing on more than thirty interviews and hundreds of hours of participant-observation, I suggest that divergent memories of brutal conflict, structural violence, and dehumanization shape the perceptions of Israelis and Palestinians and fuel everyday tension and mutual distrust. I also argue that individuals in Israel/Palestine utilize objects and images to evoke memories of the near and distant past and resist prevailing violence.

Stauder, Emily

Institution: *PA - Millersville University*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Emily Stauder

Abstract Name: **Student Shark Research at Millersville University**

The overall purpose of this study is to analyze the historical trends of shark fishing in the Chincoteague Bay area compared to recent data. The research questions we are asking are as follows: what types of sharks were in the area, if they're still in the area/have the number of sharks of any specific species decreased, increased, or remained the same, and finally why or why not? In order to answer these questions, our team must go to coastal cities/states surrounding the Chincoteague Bay area and talk with fishermen, harbor masters, and charter crews to obtain their catch logs and then study the data. Multiple trips throughout the 2022-2023 school year will take place as we travel to Maryland, Delaware, and Virginia.

Staudinger, Samantha

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Samantha Staudinger,
Mario Fabiilli

Abstract Name: **Characterizing YAP Activation in Acoustically-Responsive Scaffolds via Ultrasound-Induced Matrix Stiffening**

Hydrogels serve as an invaluable tool for studying the role of biochemical and biomechanical cues on cell behaviors, includingsubstrate stiffness. However, conventional hydrogels are designed a priori, meaning their characteristics cannot be manipulated once implemented. Our research leverages a novel hydrogel - acoustically-responsive scaffold (ARS) - to control cellular cues in a non-invasive and spatiotemporally-controlled manner using focused ultrasound. An ARS consists of phase-shift emulsions embedded within a hydrogel matrix. Upon exposure to ultrasound, the emulsion is vaporized into gas bubbles in a process known as acoustic droplet vaporization (ADV). Previously, it has been demonstrated that ADV can generate localized matrix compaction and increases in stiffness within ARSs. However, there remains a gap in characterizing the impact of ADV in ARSon the YAP gene, a fundamental regulator of mechanotransduction.Consequently, our in vitro study draws on ARS to demonstrate the nuclear translocation of YAP,a transition correlated with matrix stiffness, when induced by ultrasound. Confocal microscopy andimaging processing arebeing used to study this highly localized matrix compaction. By evaluating stiffness in ARS with the YAP reporter, we can elucidatea better understanding of the hallmarks of focused ultrasound as a novel approach to providing spatiotemporal control over cellular cues. Hence, our research strives to expand the clinical applications of ultrasound and ARS in tissue engineering, including designing more effective drug delivery vehicles and biomaterials.

Steare, Nadya

Institution: *VA - George Mason University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Nadya Steare

Abstract Name: **Víðsýni': Exploration of the Influences of Reforestation on Icelandic Landscape Identity**

The consequences of Iceland's deforestation causedby the Viking settlers continue to be apparent with regular soil erosion, flooding, and the challenge of raising livestock. Cover greenery has been vanishing in numerous parts of the land due to volcanic ash, climate change, and human activity. Most of the island lacks tall vegetation. Despite efforts to replant the forests lost to the early settlers, only a handful of projects have yielded noticeable results. During the summer of 2022, I spent eight weeks as an artist in residence at the Akureyri Art Museum in Iceland to create a new series of work inspired by Kjarnaskógur, the local reforestation project that has grown to become the country's most frequently visited woodlands. The paintings resulting from this residency and intense observational research depict the complexities of reforestation and landscape identity through personal, spatial, and cultural perspectives. The mediums used are primarily natural (local) pigments and gouache on found paper, incorporating newspapers and receipts collected during my stay. The stylistic choices and rendering pay tribute to my exposure to Icelandic history and modern architecture, resulting in a bridge between archaic and contemporary narratives. 'Víðsýni', an Icelandic word used both to describe a panoramic view and open-mindedness, is a series highlighting the importance of attentive perception to landscape and it's necessity for the shaping of future sustainable development policies. Approaching this subject from a visual art perspective allows the viewer to experience and reflect on this phenomenon that is otherwise difficult to quantify.

Stecklein, Heather

Institution: *WI - University of Wisconsin-Stout*

Discipline: **FAN Abstract**

Author/Contributors:
Heather Stecklein,
Marcie Killian

Abstract Name: **Expanding the Accessibility of Undergraduate Student Research**

As a polytechnic university, UW-Stout students are working on projects that range from oral histories and traditional research papers to game design and artwork. Presenters will discuss how the UW-Stout Archives have utilized the open access digital repository Minds@UW to both celebrate and highlight the variety of work undergraduate students are producing. This acquisition of student research project allows UW-Stout and the Archives to raise the profile of undergraduate research and creative inquiry in the arts by making student research widely accessible to researchers outside of UW-Stout. This project also gives the UW-Stout Archivists an opportunity to collect both a variety of research formats as well as topics for longterm preservation. This includes a focus on collecting research and projects from courses, such as Introduction to Queer Studies, that are connected with underrepresented groups and voices on campus. Presenters will walk through their process of working with courses and faculty members to collect student work, making the research accessible for both Stout students as well as external researchers, and preserving the student research in perpetuity.

Steczynski, Joshua

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Carolyn Shult,
Lucille Smith,
Karissa Snyder,
Joshua Steczynski,
Trinity Wilson,
Sudeep Bhattacharyay

Abstract Name: **Exploring the Disorder in von Hippel-Lindau Tumor Suppressor Protein by Molecular Dynamics Simulations**

The von Hippel-Lindau tumor suppressor protein is known to cause tumors in multiple vital human organs such as the spinal cord, retina, and varying blood vessels within the brain. It belongs to the class of intrinsically disordered proteins, which lack stable secondary or tertiary structures and their flexibility allows them to engage in a wide variety of interactions with other molecules making them biologically efficient. The folding of these proteins is still a mystery, and the conformational dynamics have remained elusive due to the absence of reliable three-dimensional structure. A simulated study of structural dynamics in the presence and absence of crowders could provide valuable insights of the conformational flexibility of the protein. The structure of the disordered protein was taken from Alphafold database - the database was created by artificial intelligence-aided protein structure solving. Five different protein systems were built: one in only water, one in ethylene glycol, and three more in the presence of varying sized polyethylene glycol (C2nH4n+2On+1) crowders (molecular weights ~ 600, 8k, and 20 k). A 50 ns molecular dynamics simulation was performed, and the data was used for further analysis. The effect of these crowders on the conformational dynamics and energetics was studied in detail using statistical tools. Results obtained in these studies will be presented.

Steele, Angel

Institution: *TX - Tarleton State University*

Discipline: **Social Work**

Author/Contributors:
Alexandra Tobar-Flores,
Robin Afshar,
Emily Allday,
Mattie Mcquary,
Angel Steele

Abstract Name: **The Lack of Awareness of the Long-Term Care Ombudsman Program**

The Texas Long-Term Care Ombudsman Program (LTCOP) is facing a lack of awareness. A lack of awareness can create a shortage of volunteers, thus causing the lack of availability of Ombudsman to advocate for the needs and rights of the residents of long-term care and assisted living facilities. This research is focused on the Texas Long-Term Care Ombudsman Program, which was put in place to protect the rights of residents in assisted living and long-term care facilities. This research is an exploratory study that investigates the lack of awareness of the LTCOP. The student researchers' hypotheses centered on the overall community awareness of the Ombudsman program and the factors that go into recruiting and sustaining the volunteers of the program. The research aims to identify the barriers that prevent the LTCOP from being effective. The student researchers administered 154 mixed methodology surveys to three different subsets: current and past certified volunteers, students on RELLIS campus, and the general public. The survey used included demographic, Likert-Type scale, yes or no, multiple-choice and open-ended questions. The student researchers obtained Institutional Review Board approval and used a non-probability, quota sampling approach. The results indicated a majority of participants were not aware of the LTCOP and its mission to advocate for the rights of residents in long-term care and assisted living facilities. Overall, findings inform the student researchers and allow them to further promote change within the Ombudsman program and improve marketing strategies in the community to increase volunteer numbers.

Steen, Slane

Institution: *KY - University of Kentucky*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Slane Steen *McAllister Stephens* *Joshua Beckmann*

Abstract Name: **The Effect of Chronic Methamphetamine Administration on Neural Encoding of Value**

In 2020, 1.5 million people in the United States met the criteria for Methamphetamine Use Disorder (MUD; SAMHSA, 2021) and in Appalachian Kentucky, methamphetamine use is on the rise. MUD is characterized by the choice for drug at the expense of other alternatives, making it a decision-making pathology (Koob; Volkow, 2016). Previous studies in our lab have implicated shifts in the relative value between drug and alternatives as a factor in this behavior. To investigate this hypothesis, Intracranial Self Stimulation (ICSS) in the right Ventral Tegmental Area (VTA), a key brain region for the reward system, was used as a direct model of value in order to examine valuation changes before and after chronic methamphetamine injections in a rodent model. Following implantation and customization of stimulation parameters, a frequency threshold program was administered to determine changes in demand for stimulation using a behavioral economic demand analysis. Following threshold training, a Controlled Reinforcement Ratio (CRR) program involving an isomorphic choice between a stable and sweeping range of ICSS frequencies was used to assess value-based decision-making both before and during methamphetamine injections. Once choice data was stable, the animals were given methamphetamine injections (1mg/kg) and placed in locomotor chambers to track sensitization. Following eight days of methamphetamine injections, the frequency threshold was reassessed. Preliminary data analysis indicates that animals did not show methamphetamine-induced locomotor sensitization, but showed an acute increase in locomotion after injection. There was no change in value-based decision-making of the CRR program, but an alternation in the demand for stimulation. Further analysis with the exponentiated demand model and the generalized matching law will allow for a more precise examination of changes in rodent behavior. These results suggest that despite changes in the neural valuation of stimulation to the VTA, the rats showed no impairments in making value-based decisions.

Steeno, Evan

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Gokul Gopalakrishnan,
Evan Steeno,
Erin Trocke,
Marc Aruguete

Abstract Name: Fabrication of MEMS Filters for Applications in Rapid Prototyping and Biotechnology

Effective techniques for the separation and spatial manipulation of shaped microscopic particles are vital to applications in fields ranging from biotechnology to manufacturing. For instance, shape-specific separation can be used to isolate microbes and biomolecules. Printers used for rapid prototyping from composite materials could benefit from a device that constrains the orientation of microscale filler materials such as metals, glass or carbon fibers.The separation and alignment of shaped particles is generally challenging, since nonspherical particles can freely rotate and present different faces during motion. In this presentation, we describe the fabrication of lithographically patterned and anisotropically etched microscale pores in a single crystal silicon substrate, that are designed to overcome these difficulties. We present data on the engineering limitations and outcomes of this fabrication process and preliminary results from flow testing. These precision-engineering pathways show promise for both the shape-based separation of non-spherical particles aswell as in controlling their spatial orientations.

Steffes, Katie

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Education

Author/Contributors:
Amanda Dohms,
Katie Steffes

Abstract Name: Perceptions of supporting and cultivating partnerships with families of children with differing abilities.

The purpose of this research is to examine strategies and supports used tocultivate partnerships with families who have children with differing abilities. We know that there are many benefits to partnering and working collaboratively with families, but how do early childhood educators support and share resources? Along with a review of literature, surveys will be used to seek early childhood educator perspecives regarding supports and resources for children with differing abilities. Participants will bre provided a survey with questions pertaining to their experiences with children with differing abilities and their families. They will also be asked about their ability to find, access and share community resources.

Stegner, Chloe

Institution: ***TX - San Jacinto College***

Discipline: **History**

Author/Contributors:
Chloe Stegner

Abstract Name: **Polish History and Culture in Texas**

Texas is known for its rich Latin and Spanish influence, but significant pieces of Texas history can be accredited to immigrants from Poland. Polish natives came in waves to Texas and brought with them their work ethic, strength, and vibrant history that would impact the cultural makeup of Texas. I come from a family of Polish descent, and we have not held on to the roots of our history. I figured there was no vast Polish base so far south in America, and I should come to terms with having no ties to my ancestry. However, a dive into the cultural scene of Texas led me to discover an enormous Polish base in the state. The Polish history of Texas can be traced to before the Civil War when Spanish explorers named the San Jacinto River after the Polish saint, Św. Jacek Odrowąż. The impact of the Polish people still influences the state today, bringing a rich layer of cultural diversity to Texas.Texas is home to the nation's oldest Polish settlement, Panna Maria. This city is located south of San Antonio and began the migration of Polish immigrants across the state. Hardship and adversity caused settlers to branch out into nearby towns such as St. Hedwig, Bandera, and New Waverly. Since the original waves of migration, Polish culture has spread through Texas by way of dance, music, religion, and food. The Orleta Dance Ensemble of Dallas brings Slavic routines, clothing, and tradition to the North Texas area. Further south, the Axiom quartet of Houston is reinventing Old World sounds. Houston is a sizeable hub for Polish culture, serving as home to grocery store Polonia and Our Lady of Czestochowa Catholic church. The church hosts two annual Polish cultural festivals in May and September, celebrating two meaningful holidays in Poland.

Stein, Talya

Institution: ***CAN - Carleton University***

Discipline: **Political Science**

Author/Contributors:
Talya Stein

Abstract Name: **Knowledge Gaps Between Canadian Public Policy and Religious Actors; Another Hurdle for Women in Agunah**

This research seeks to examine the consequences of Canadian public policy and its failure to protect vulnerable populations, especially women in traditional religious communities. Through this examination, light will be shed on greater social issues like gender inequality and cultural alienation, which are pervasive in many Canadian communities. I will use the Jewish divorce phenomenon, known as agunah, the spiritual chaining of spouses, to illustrate the social consequences that arise once public policy overlooks religious affairs. The knowledge gaps in Canadian public policy that enable agunah, worsens human right's abuses, and religious and community alienation as well as weakens Canadian institutions. My research first briefly explains the delay, refusal and extortion of granting a Jewish divorce as get abuse. Get abuse directly contributes to the agunah phenomenon which leaves many severe religious and spiritual consequences in its wake. After an understanding of agunah is established, I deconstruct Section 21.2 of the 1990 Divorce Act and exemplify how a situation of agunah could occur by the manipulation of the provision in order to remove barriers to divorce. Lastly, I employ the 2007 case of "Bruker v. Markovitz" to explore the instances in which existing knowledge gaps weaken Canadian institutions. Though steps have been made by Canadian policy makers and judicial figures to prevent the proliferation of agunah and get abuse cases, there still lacks sufficient precedent or literature available to make meaningful change. This egregious oversight of public policy leaves religious and cultural minorities largely leaves the women to grapple with legal incongruences and spiritual pain. An active effort to grasp religious law and legal nuances by public policy makers must be made in order to mitigate social maladies and protect all populations, including religious and culturally diverse Canadians.

Steinhoff, Alexis

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Alexis Steinhoff *Jonathan Wendel* *Corrinne Grover*
Josef Jareczek

Abstract Name: **Alternative Splicing during Fiber Development in Gossypium hirsutum**

Studying cotton fiber over its development elucidates topics surrounding polyploidy in plants, as well as their evolution. During cotton fiber development, there are key stages: initiation, elongation (primary cell wall synthesis), secondary cell wall thickening, and maturation. Major changes happen within cotton fiber at these stages which may be due to alternative splicing in the genome. Alternative splicing is a mechanism in the genome that can cause different proteins to be produced by the same gene; these differing proteins are called isoforms. We hypothesize that over the course of fiber development, particular isoforms may correspond with known timepoints in cotton plant development. The methodology used for this study includes the growth of Gossypium hirsutum, collection of cotton bolls from 6 to 25 days post anthesis (DPA) with 3 biological replicates, and RNA extraction and Illumina sequencing of each sample. Extracted RNA from samples at 6, 9, 12, 15, and 18 DPA are pooled and sent to be sequenced by Pac-Bio Isoseq. From these sequencing techniques, we will get short reads (Illumina) and long reads (Isoseq). The long reads are more precise with less possible mistakes made during genome assembly - these will act as a map to align short reads together. The short reads ascertained are much smaller fragments of the genome and therefore less accurate unless aligned using a known map (i.e. our long reads). By sequencing short reads at each DPA, the isoforms can be analyzed to determine whether they correspond with a particular day in development. Overall, the results should determine whether there are genes being alternatively spliced at specific timepoints during the development of cotton fiber. Investigation of alternatively spliced genes throughout fiber development in Gossypium hirsutum will aid in the understanding of polyploidy in plants, and the breeding and manufacturing of cotton.

Stender, Dondi

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Biology

Author/Contributors:
Dondi Stender,
Jagger Mess,
Morgan Bradford

Abstract Name: **Freshwater Mussel Surveys of Southwest Wisconsin**

Freshwater mussels are essential to our ecosystems by enriching the rivers and lakes. Their prevalence throughout Wisconsin has been a scarcely researched topic throughout the years, but the trends of their abundance have begun to emerge. This field however is experiencing renewed scientific interest due to a recent statewide survey conducted by the Wisconsin Department of Natural Resources. These studies have shown the health of northern Wisconsin mussels' communities to be thriving, particularly following rehabilitation efforts in water bodies like the Fox River. Unfortunately, studies in the southeastern part of the state show the opposite results. While there is a myriad of survey results and data from these regions, there is a lack of evidence to show the status of freshwater mussels in Southwest Wisconsin. The previously believed notion was that the populations of the southwestern regions of the state would mirror those of the southeast, particularly given the agricultural activities in the region. However, after extensive surveying of watersheds in the counties of Grant, Iowa, and Lafayette; our evidence shows their presence in select streams of the region, despite being undetected in years prior. Our team explored the factors that were contributing to this inconsistency with our counterparts in the southeast, particularly given that the distribution was patchy. The correlation of factors such as physical, biological, and chemical components was taken into consideration as possible causes of presence or absence. The findings made it apparent that the freshwater mussels were abundant in certain areas of the region but not others. The research we conducted has helped contribute to the baseline knowledgebase of freshwater mussels throughout the state and assisted in providing data for an otherwise largely unstudied region of Wisconsin.

Stennett, Gretchen

Institution: ***IA - Dordt University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Gretchen Stennett,
Karen Reynolds,
Manuela A.A. Ayee-Leong, Ph.D.

Abstract Name: Molecular Study of Protein-Protein Interactions Associated with Charcot-Marie-Tooth Disease

The progressive neurological disorder associated with disruptions in morphology of the myelin sheath surrounding peripheral nerves is known as Charcot-Marie-Tooth (CMT) disease. This disorder inhibits the motion and control of the peripheral limbs. Amino acid substitutions of Myelin Protein Zero (MPZ), the most prevalent protein found in the myelin sheath, have been identified in patients suffering from this disorder. The effects of these point mutations on the molecular interactions between MPZ proteins are as yet unclear, however, MPZ oligomerization has been hypothesized to impact the structure and integrity of the phospholipid bilayers within which MPZ resides. We undertook a molecular dynamics simulation study to provide further insight into how these mutations perturb the interactions of MPZ molecules within the myelin sheath and disrupt the bilayer structure. We utilized coarse-graining approaches to build multicomponent bilayer membranes containing MPZ and created topologies for mutated forms of the protein. Although there have been over 200 potential point mutation sites identified in CMT patients, preliminary results indicate that an alanine substitution in the extracellular region of MPZ may be responsible for perturbed interactions between MPZ molecules and a disruption of the intraperiod line distance between bilayer membranes. Such a disruption could result in loss of neural signal, thereby impacting motor control downstream.

Stensen, Cameron

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Josh Zupanc,
Pablo Garcia,
Jenna Roth,
Brynn Daniels,
Nick McFadden,
Cameron Stensen

Abstract Name: Smartphone Use and Well-being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. This study will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.

Stensland, Gabby

Institution: *MN - Minnesota State University - Mankato*

Discipline: Communication Science and Disorders

Author/Contributors:
Julia Swanson,
Gabby Stensland,
Ju-fang Liu

Abstract Name: Multicultural Perspectives in Aphasia

Language is the production of our thoughts, cultures, and lives. It converts our minds into a more concrete form that allows people to understand each other. It also associates closely with our habits and mentality. The speech-language-hearing sciences field is one of the whitest fields in the U.S. and most research is biased toward the white-dominant population while some racial and ethnic minorities are more likely to suffer severe strokes and disparities in long term outcomes. Whereas there is almost forty percent of non-white in the United States of America, signaling the existence of diverse mindsets in which the disorders and treatments cannot be concluded only from the existing data.The mental health, the related cultural background, and the customs of different ethnicities may broadly impact the therapy and the results. In the current speech-language-hearing science field, we barely examine clients through the lens of mental health and multiculturalism. This single subject design study is to explore diverse perspectives about aphasia reported by marginalized clients with aphasia. Two participants were interviewed about their views about aphasia. The interview questions were modified from an explanatory model approach proposed by Kleinman and Beeson (2006) to explore the participants' understanding of the meaning of illness. Thematic analysis will be conducted. The results of this study will help further understand and help meet the needs of individuals who belong to an ethnic minority group and are affected by aphasia.

Stepanek, Jocelyn

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Leah Rook,
Jocelyn Stepanek,
Zach Caterer,
Katie Feuker

Abstract Name: Fourier Transform Infrared Spectroscopic Imaging for Detection of Biomarkers in Patients with Alcoholic Steatohepatitis

Infrared spectroscopic imaging has been shown to be useful as a diagnostic tool for tissue imaging. IR imaging allows for a label free approach to identifying biomarkers and molecular changes associated with disease progression. Alcoholic steatohepatitis (ASH) is a progressive liver disease caused by prolonged, excessive alcohol consumption. It often leads to liver cirrhosis. ASH is difficult to diagnose because clinically it presents similarly to other liver diseases, like non-alcoholic steatohepatitis. A liver biopsy is the current standard diagnostic method for diagnosing alcoholic steatohepatitis. The current process involves staining and diagnosis by a pathologist, which requires an extended period of time. Early diagnosis is important to prevent further liver damage. IR imaging provides a rapid imaging technique that can be used to identify biomarkers in tissue linked with ASH. In this study, we applied Fourier Transform Infrared (FT-IR) Spectroscopic Imaging to obtain detailed images of liver tissue samples from patients previously diagnosed with ASH. These images contain biochemical information that allows for the determination of biomarkers and biochemical changes associated with alcoholic steatohepatitis.

Stephani, Marlene

Institution: ***UT - Weber State University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Marlene Stephani,
Kamryn Eden,
David Aguilar-Alvarez

Abstract Name: Tapering Before NCAA Division I Cross-Country Competition Reduces Plasma HDL-C But Has No Effect on Structural HDL Apolipoproteins

Exercising has shown to increase HDL-C levels in most populations, however it is uncertain if it has an effect in structural apolipoproteins such as apolipoprotein A1(Apo-A1) expression and secretion. Cross-country athletes undergo a period of tapering before competition resulting in reduced physical activity. The purpose of this study was to determine if the changes in physical activity that cross country athletes experience during the season and in preparation for competition affects their HDL-C. We hypothesize that the tapering period will result in reduced HDL-C and its structural apolipoproteins.Twenty seven D-I cross-country athletes, ages 19 to 25 years old, were followed for one season (four months). Blood was collected at the beginning of the season and analyzed for HDL-C levels through enzymatic spectrophotometry using the Alfa Wasserman Ace Axcel® biochemistry analyzer. Apo-A1 and Apo-CIII were measured through Luminex® MAGPIX® multiplex assays. Paired-samples t-test comparing the preseason (pre) vs postseason (post) values was performed using IBM® SPSS Statistics 25.HDL-C levels decreased significantly from pre = 64.2 ± 2.7, vs post = 60.7 ± 2.5 mg/dL p = 0.03. Apo-A1, 92.3 ± 6.5 vs 88.8 ± 6.8, p = 0.23 and Apo-CIII 13.8 ± 0.1 vs 13.3 ± 0.5, p = 0.37 showed no statistical difference from pre vs post. Our study shows that HDL-C levels are decreased by a period of time as short as 4 months. However, we did not observe a change on apolipoproteins A1 or CIII. These findings suggest that although exercise can modulate lipidation of the HDL particle through the process of cholesterol esterification in the reverse cholesterol transportation (RCT), Apo-A1 expression and secretion may be modulated independently of this process as we did not observe any changes in apolipoprotein concentrations.

Stephens, Abigail

Institution: ***TX - Tarrant County College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Abigail Stephens

Abstract Name: Lost Girls: Unmasking Gender's Effects on ADHD Diagnosis

Women and girls are less likely to be diagnosed with ADHD. Although female diagnoses are rising, the disparity lies in females' access to forms of treatment, which they only seem to receive if symptom severity is high. Women and girls are being diagnosed less because symptoms in females often present differently, in a way that isn't as easily diagnosed leaving them lost in the chaos that is ADHD. Males tend to be diagnosed with the ADHD-HI presentation causing them to be more hyperactive and impulsive, while females are diagnosed with the ADHD-I presentation meaning their symptoms appear as inattentiveness, withdrawal, and lack of emotion and mood regulation. Female symptoms can often appear as depression and/or anxiety and typically come with the onset of puberty, which in turn results in an incorrect diagnosis. By internalizing these unrecognized symptoms, a correct diagnosis becomes harder as females tend to "mask" to conform to society's demands as evident throughout history. Society's stereotypes surrounding women have fed into this overall failure of recognition. For instance, when a woman is having trouble remembering something, difficulty concentrating or controlling her emotions she might be referred to as "spacey" "bossy" "crybaby" or "blonde" which are all labels dismissing the real problems women and girls are facing. By not receiving the correct diagnosis they do not receive the help they truly need which can affect their education, and overall growth and development. The gender gap and stereotypes surrounding ADHD and women, which continue to persist need to be addressed so that females get the help they need and deserve.

Stephens, Christian

Institution: *AL - University of Alabama*

Discipline: Psychology/Neuroscience

Author/Contributors:
Christian Stephens

Abstract Name: **Forensic Evaluators' Considerations of Contextual Information in Adjudicative Competence Cases**

In all instances, the specific collateral and assessment information sources used by forensic psychologists during an evaluation are critical components towards determining a defendant's competence to stand trial (CST). However, a growing body of research suggests forensic psychologists may be influenced by cognitive biases during their evaluations, leading to variability in their decisions, reasoning, and conclusions. Exposure to irrelevant and potentially biasing contextual information during an evaluation has been noted as a contributor to this variance. Nevertheless, the extent to which evaluators use specific information sources and their perceptions of source task-relevance remains largely unknown. The proposed study will address this gap by quantifying evaluators' perceived task-relevance of their most-used information sources across CST referral concern contexts. We will distribute an online survey to licensed forensic mental health evaluators via professional psychology-law listservs (American Psychology-Law Society (AP-LS) and PSY-LAW) and directly contact internship and postdoctoral training directors listed on the Association of Psychology Postdoctoral and Internship Centers directory. Participants will be randomly assigned one of three surveys reflecting clinically plausible referral concern scenarios, each of which will address either a hypothetical defendant's factual understanding of courtroom proceedings, rational understanding of courtroom proceedings, or ability to assist his/her counsel. Analyses will determine potential significant differences and correlations of source usage rankings and task-relevance ratings across referral concern types. Our results will highlight potential inconsistencies between information sources' usage and general perceptions of task-relevance, lay the groundwork for future bias mitigation strategy studies and implementation, and promote the development of standardized CST evaluation methodologies.

Stepnowski, Kendra

Institution: *WI - Marquette University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Kendra Stepnowski,
Aleksandra Snowden

Abstract Name: **Alcohol Availability and Crime: Does the relationship vary by the unit of analysis?**

In this study, we analyze the impact of alcohol outlets on crime in Milwaukee, WI estimated at three different levels of aggregation (i.e., block group, tract, neighborhood). We used Esri's ArcPro geocoding tool to map 2020/2021 FY liquor licensed alcohol retailers and separated them by the broad categories of alcohol outlets: on-premises (bars, taverns, etc.) and off-premises (liquor stores, convenience stores, etc.), resulting in 1,293 locations in total across these broad categories. This geocoding tool was also used to map 2020 reported crimes (sex offense crimes are omitted from the geospatial analysis because the spatial location of these incidents is not publicly available), resulting in 34,564 crimes analyzed in this project. Subsequently, these spatial data points (alcohol outlets and crimes) were aggregated across three different units of analysis: census block groups, census tracts, and neighborhoods. In a related project, we estimated socioeconomic characteristics for neighborhoods using the areal interpolation method. Currently, we are analyzing the results of the association between alcohol outlets and crime across these three different units of analysis, when controlling for areal interpolation estimates for the neighborhoods. The analyses will be completed in time for our presentation. This project has important theoretical and methodological implications for criminological and public health literature because it sheds light on whether associations between alcohol outlets and crime exist regardless of the unit of analysis used to estimate the relationships. As such, it contributes to the field by better understanding the nuanced nature of the alcohol/violence association.

Stetzer, Katie

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Katie Stetzer *Lily Egan* *Abby Arend*
Tom Sather *Lesley Mayne*

Abstract Name: Perceptions of Social Media's Educational Value in Relation to Evidence Based Practice

This project evaluates the educational value of social media platforms including TikTok, Instagram, and Twitter as course-based learning supports in an online graduate-level aphasia course. Components of evidence-based practice (EBP) in each of the three social media platforms are analyzed against student posts. These components include client perspectives, clinical expertise, and internal/external evidence (ASHA, n.d.). Additionally, student perceptions regarding the utilization of social media in course-based assignments are analyzed.Individually, TikTok (Escamilla-Fajardo et al., 2021), Instagram (Carpenter et al., 2020), and Twitter (Hull; Dodd, 2015) indicate a positive response among students and faculty in higher education. Social media in a classroom setting can help co-create knowledge, facilitate different learning styles, promote experiential learning, and enhance collaborative skills (Stathopoulou, 2019). Though each of the platforms are continuously rising in popularity, there is a substantial absence of conducted research studies that evaluate them holistically.A course-based assignment requiring use of each of the three social media platforms was assigned to 24 graduate students in an online aphasia-related course. Six prompts were presented every two weeks, and students used their assigned social media platforms to explore and develop answers to the prompts. Platforms were rotated across all students, so each student used each platform twice.The social media relics submitted by students were categorized based on the three components of the EBP triangle. Frequency counts for the presence of EBP domains within submissions for each platform will be presented. Additionally, student perceptions of each platform, their learning benefits, and their comparative value to the other course assignments will be discussed. Results will be discussed and applied to potential course-based pedagogical applications using social media platforms.

Stewart, Bryn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Claire Kidwell *Clara Gland* *Bryn Stewart*
Cade Shipman *Emily Kerr* *Grace Thompson*
Rebecca Sheetz *Megan Gawlitta* *David Leland*

Abstract Name: Smartphones, Attention, and Brain Electrical Responses

Given concerns about how distracting smartphones can be, we are interested in how they affect attention-related brain electrical activity. Previous research suggests that the mere presence of one's smartphone can negatively impact behavioral performance on an attention-related task. The aim of our ongoing study is to investigate whether simply having one's smartphone present and visible (although shut off) influences attention-related EEG (electroencephalographic) activity. We are assessing this in two ways. First, subjects perform an oddball task, which requires attention and responses to occasional target stimuli ("oddballs") among many task-irrelevant stimuli ("standards"). The P3, a late component of the event-related potential (ERP), is typically larger to oddballs (which receive more attention) than standards; we predict an attenuation of this oddball effect in the presence of one's phone versus a control non-phone object (tile). Second, we are looking at EEG power in the beta range (13-30 Hz) as subjects passively view their phone versus the control object. Since beta activity is positively correlated with alertness and attention, we predict greater beta power in the phone condition. Furthermore, we predict a correlation between beta power in response to one's phone and attenuation of the P3 oddball effect by one's phone; that is, the more attention is garnered by one's phone the more we think their phone will distract from a phone-irrelevant attention task.Preliminary data suggest increased beta activity in the presence of the phone and replication of the classic P3 oddball effect, but are unclear about an impact of smartphone presence on P3 amplitude.

Stewart, Claire

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Psychology/Neuroscience

Author/Contributors:
Claire Stewart,
Despina Stavrinos,
Benjamin McManus

Abstract Name: How Development and Experience Affect Perceived Cognitive Load During Distracted Driving

Driving inexperience and inattention increase cognitive load and motor vehicle crash risk. Young age and driving inexperience are strongly associated with crash risk, and a combination may impact cognitive load while driving, particularly when distracted (e.g., cellphones). This project examined age and driving experience on perceived cognitive load during simulated drives under varying distraction conditions. It was hypothesized older age and greater driving experience would be associated with lower perceived cognitive load.One hundred ninety teens (MAge =17.12 years, 53% Female, 53% non-white or Caucasian) were recruited based on age (16 vs. 18) and licensure (Non-licensed [n=109] vs. Licensed within 2 weeks of recruitment[n=81]). Participants completed 3 drives in a high fidelity fully immersive driving simulator. A randomly ordered distraction task (no-task, cellphone call, or texting) was completed for the duration of each drive. During the call and texting tasks, participants communicated with an unfamiliar research assistant who used a semi-scripted list of questions and conversation topics. After each drive participants completed the NASA Task Load Index (TLX), a well-validated self-reported measure of perceived cognitive load incorporating mental, physical, and temporal demands, and perceived performance, effort, and frustration ratings.Repeated measures ANOVA indicated TLX scores from the phone call (M=62.08) and texting conditions (M=71.24) were significantly higher (.001) than those with no distraction (M=47.04). Non-licensed teens reported significantly higher TLX than licensed peers only in no-task conditions, especially for those aged 16. These results suggested that although experience may lower cognitive load for undistracted driving, distractions increase cognitive load regardless of experience.

Stier, Martin

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mateo Jimenez,
Paul Green,
Ekim Koca,
Colin Brennan-Carey

Abstract Name: Driver Interface Research: Describing Driver Driving Performance

There is an increasing amount of miscommunication and misunderstanding within the transportation industry on the definition and use of different measures and statistics. There is a lack of consistency and existing definitions are often too vague. In 2015, Society of Automotive Engineers J2944, “Operational Definitions of Driving Performance Measures and Statistics”, published a standard for definitions and measures of driving performance. It identified different definitions and outlined proper procedures to follow when applying and measuring different driving performance measures. The purpose of the current project is to create a set of definitions and measures for both on-road and off-road contexts through an extensive literature review. Published data is being compiled for every single measure in the original J2944 standard while also expanding to off-road measures. This expansion to off-road measures is to ease comparisons between on-road data and off-road data and allow the use of the standard in military operations. Since driving has remained practically unchanged since the 1970s, this literature review spans any papers within the last 50 years that focus on driver performance. Once complete, the findings should remove the confusion surrounding confounding definitions in the transportation industry. It will develop a standard for future journal articles, proceedings papers, technical reports, and presentations to follow.

Stillman, Marna

Institution: ***FL - The University of Tampa***

Discipline: Psychology/Neuroscience

Author/Contributors:
Jennifer Martin,
Marna Stillman,
Benjamin Marsh

Abstract Name: Race Based Memory Errors in the Cross Race Effect When Remembering a Narrative

Two experiments analyze how a narrative and its protagonist are remembered depending on the participants' race. The cross-race effect (CRE), a phenomenon where individuals have poorer memory for faces outside of ones' race compared to faces within their race, was examined. It was hypothesized that White participants would experience more race-based errors when the protagonist was a Black male in comparison to a White male. Also, White participants would be more likely to confuse the Black protagonist with other Black characters. Black participants (experiment 1 only) and White participants were given a short narrative about a male protagonist, Jackie. Four faces would appear: Jackie and the loiter, who alternated being Black and White, and the cashier and server, who were both White females in experiment 1, but Black or White females in experiment 2. After reading the narrative, the participants responded to a series of questions to test their memory of events and character faces. In both experiments, findings suggest that White participants had a higher rate of race-based memory error when presented with Black Jackie than White Jackie. The results suggest that patterns are used to aid in filling in memory gaps and those patterns can be related to racial expectations. Additionally, White participants, in experiment 1 and 2, misidentified Jackie the most when he and the loiter were both Black. In contrast, Black participants misidentified Jackie the most when both he and the loiter were White. In short, the CRE was supported in both experiments and in Black and White participants. Implications are that race and culture may influence the way we remember and misremember details of an event.

Stillman, Noah

Institution: ***NC - High Point University***

Discipline: Communication/Journalism

Author/Contributors:
Noah Stillman

Abstract Name: Fear, framing and fins: Impact of shark media portrayals and Shark Week viewership on US adults? conservation support

From shark attacks on the news to villains in cartoons, mass media often depicts sharks as antagonists. Yet, sharks are keystone species of the oceanic ecosystem and many are critically endangered. Programming like Discovery Channel's Shark Week could spread awareness of the ecological value and vulnerability of sharks, although programs featuring shark aggression may counteract viewers' concerns for their welfare. This study is a 2x2x2 survey experiment with 805 US adults recruited October 2022 from Mechanical Turk. Each participant saw one of eight experimental videos about sharks, which varied with regards to the individual interacting with sharks (celebrity or researcher), the nature of the shark content (educational or aggressive), and the framing of the call for shark conservation (gain or loss-framed). Regular Shark Week viewers reported greater wildlife conservation donation and federal funding support. In the full sample, loss-framed messages inspired greater feelings of hope that we can protect shark species, controlling for conservation support. A three-way interaction indicated greatest hopeful reactions to the loss-framed aggressive video featuring a celebrity. Participants perceived greater social and ecological value of sharks if they saw the celebrity in educational shark content (M = 4.14 out of 5.0) or the researcher in aggressive shark content (M = 4.16; compared to celebrity-aggressive M = 4.07 and researcher-educational M = 4.01). Impact on perceptions of sharks' value was moderated such that only participants who were not regular Shark Week viewers were impacted by experimental factors. Hope was a stronger predictor of intention to donate to shark conservation compared to perceived value of sharks, regardless of Shark Week viewership. Results suggest that scary shark media may not undermine support for shark conservation. Viewers with less exposure to shark content are impacted in more nuanced ways. Findings have practical implications for promoting public support for conservation funding.

Stimson, Isabelle

Institution: *NC - Elon University*

Discipline: Mathematics

Author/Contributors:
Isabelle Stimson

Abstract Name: **Comparing Secondary Mathematics Teachers' Technology Use Across Three Countries**

Technology integration in the classroom has been established for years, introducing new teaching styles and execution of pedagogical approaches. Due to remote learning many schools experienced during 2020 and 2021, the technological advancements have intensified, along with the support they provide teachers. Therefore, the field of mathematics education must develop ways to assist teachers in utilizing technology. This study sought to determine the impact the fluctuating environments had on secondary mathematics teachers' ability to teach mathematics within the International Baccalaureate (IB) system, and how these fluctuations affected teachers' ability to promote accessibility, equity, and achievement for students. The presentation reports on qualitative research and thematic analysis conducted with IB secondary mathematics teachers in the United States, United Kingdom, and Australia, and consisted of a questionnaire, interviews, and field observations. The questionnaire encouraged the participants to reflect on their experience during in-person and virtual learning and highlighted two educational frameworks. The interviews presented an opportunity for the participants to expound upon their questionnaire responses and communicate more nuanced expositions regarding their teaching experiences with technology in in-person and virtual classrooms. The field observations created an opportunity to analyze how the use of technology in the classroom impacts the students' abilities to understand the mathematical concepts, and whether the teacher's perspective of their teaching aligns with what actually occurs. Understanding the language used by the participants when they reflect on their teaching and students' learning allowed for comparisons across the three countries. Through the analysis, frequency-based themes were constructed from the questionnaire responses to create an evolution of questions for the interviews. These insights led to the creation of the analytical lens used throughout the field observations. Findings from the questionnaire, interviews and field observations will be shared along with implications for the preparation and development of mathematics teachers regarding technology use.

Stockwell, Alexander

Institution: *CO - Regis University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Shannon Killian,
Alexander Stockwell,
Han Do,
Fernanda Bahena,
Stacy Chamberlin

Abstract Name: **Identifying Cognate RNA Sequences of Non-Structural Protein 9 in SARS-CoV-2**

As an RNA+ virus, SARS-CoV-2 infection (COVID 19) leads to direct translation of viral RNA to produce non-structural proteins (Nsp) responsible for viral replication. For example, Nsp 7 and 8 are thought to act as a helicase, Nsp 9 as a single stranded RNA binding protein and Nsp 12 as the replicase essential to the proliferation of the virus. Studies of homologous, Nsp 9 proteins in HSV, MERS, and SARS-CoV-1 indicate this protein binds both DNA and RNA sequences. In SARS-CoV-2, Nsp 9 contains an unusual OB, greek key motif thought to keep RNA single stranded for efficient replication in other viruses. Together these results suggest, Nsp 9 may function in SARS-CoV-2 to keep the viral RNA linear for replication by Nsp 12; however, little is known about the RNA binding requirements or structural contacts and interactions in this protein-RNA complex. Tryptophan fluorescent studies of Nsp 9 have been developed to identify cognate RNA binding sequences and structures. Initial studies indicate binding of an RNA pseudoknot structure in the 3'-untranslated region of the viral RNA. Further analysis of RNA structural requirements for stable Nsp 9 binding will be important in further deciphering the role of Nsp 9 in SARS-CoV-2 as pseudoknot structures in the 5' and 3'-UTR have served as a switch from viral RNA translation to replication and may serve as a handle for control of this ever infecting and mutating virus.

Stoeber, Luke

Institution: *FL - Jacksonville University*

Discipline: **Biology**

Author/Contributors:
Hannah Williams,
Samantha O'Keefe,
Luke Stoeber

Abstract Name: **Effects of Microplastics Exposure in the Sea Anemone, Exaiptasia pallida**

Microplastics are one of the most common forms of pollution found in marine environments, and their small size (<5mm) allows them to be easily ingested by marine biota. Exaiptasia pallida is a solitary anemone native to the western Atlantic that harbors symbiotic dinoflagellates like those of reef building corals, and passively feed on prey such as brine shrimp. To assess the influence of microplastics on E. pallida, a series 48-hour laboratory experiments were conducted in which symbiotic and aposymbiotic anemones were exposed to 100 µm polystyrene microplastic beads in the presence and absence of brine shrimp. Ingestion and egestion of microplastics, and photosynthetic parameters were measured at 3, 24, and 48 hours following initial exposure. At 48 h, anemone tentacles were harvested and analyzed for algal symbiont density. Physiological stress in the anemones was investigated via assessment of antioxidant enzymes, superoxide dismutase, catalase, and glutathione peroxidase. E. pallida consumed polystyrene beads in every microplastic treatment, and both presence of brine shrimp and symbiotic state significantly increased microplastic ingestion. Aposymbiotic anemones ingested more microplastics than symbiotic anemones, suggesting that bleached anemone communities may be more susceptible to microplastic pollution.

Stoll, Neal

Institution: *IA - Iowa State University*

Discipline: **Environmental Studies**

Author/Contributors:
Neal Stoll

Abstract Name: **Planning For Water Resources in Iowa**

Water is integral to Iowa's history, geography, and economy. It is the only State with two rivers as its defining borders. Those rivers, the Mississippi and Missouri, were crucial in Iowa's growth and development. Today, Iowa is still reliant on its rivers and waterways for transportation of goods, agriculture, and recreation. Yet, despite their importance, Iowa's water sources are highly susceptible to degradation. Agricultural runoff creates excessive nitrate levels and algae blooms. Soil sedimentation from erosion leaves Iowa water unclean. In addition, Iowa is afflicted with both violent flooding and devasting drought. With all of these issues surrounding water, planning for it becomes a necessity. From rural communities to urban centers, Iowa requires careful and considerate planning for its stormwater runoff and flood mitigation.Many Iowa communities have already established water resources plans, including Des Moines, Ames, Cedar Rapids, and Iowa City. By examining and comparing these plans it is easier to understand Iowa's planning challenges and what solutions are best suited for the State. With this information, one can also extrapolate the actions rural communities can take to protect water quality and generate income while creating recreational services for the community. With advances in agriculture technology, the time is now for rural communities to adopt climate action plans. In doing this, they have the opportunity to both benefit themselves and secure the future ofgenerations to come.

Stone, Dylan

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **Biology**

Author/Contributors:
Colin Van De Loo,
Dylan Stone,
Jessica Brandt

Abstract Name: **Algae Growth in Relation to Biodiversity of Freshwater Systems in Northeastern Wisconsin**

The focus of the study is to determine whether large-scale algae blooms in Wisconsin affect biodiversity in freshwater systems throughout the northeastern part of thestate. We will be focusing on a pond linked to the Fox River system in order to analyze and measure the, overall, biodiversity of the water system. The pond exhibits large algae blooms annually, typically starting to cover <2/3 of the pond surface by June. The study will focus on physical removal of algae using barley straw as a medium of decomposition:One of the products of its decomposition is hydrogen peroxide. Hydrogen peroxide is useful in destroying algae as H2O2 has a weak central bond and will form a hydroxyl radical when its bond breaks. This will target the cell wall of nearby organic compounds, such as the algae, and force the bond to break in order toreform with the radical, essentially killing the algae. The byproducts of this reaction are simply O2 and H2O (oxygen and water). There is no toxic residue left behind in the water. Seeing as the barley straw will be introduced bythe surface of the water, and the reaction will happen relatively quickly, it is unlikely that other organisms will be negatively affected by this process. Any reaction with other organisms such as plants or fish will only damage epithelial cells, however a smaller protist such as algae will be removed quite efficiently. Ostensibly, an increase in the overall health of specific microorganismsshould benefit macro-organismsfurther upthe food chain, as oxygen content increases throughout the freshwater system.

Stone, Mykola

Institution: *MT - Montana State University - Bozeman*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Mykola Stone

Abstract Name: **Achieving Photomanipulation of Droplets in Porous Microfluidic Systems**

Microfluidics is incredibly useful with boundless applications from chemical biology and information technology to experimental studies on large-scale phenomena. Microfluidic systems are cost-effective, require small amounts of reagent, reduce the time required to output results, and allow for better control of experimental parameters. Unfortunately, operations on the microscale require complex systems including active (pumps, valves, etc.) and passive elements (microchannels, porous media) to control the fluid. Manipulation of droplets with light, based on the photo Marangoni effect, offers a promising solution that could take place of or work with active and passive elements of the system, reducing cost and difficulty, and increasing the efficacy when working at the micro or nanoscale. This technique is based on the unique property of a surfactant called azobenzene trimethylammonium bromide (AzoTAB), which is sensitive to light. The surface tension increases subject to UV light and decreases with blue light. Employing this unique effect, a surface tension gradient can be created at the water-oil surface, leading to an interfacial flow, which can in be used to manipulate an oil droplet. This method does not require any physical contact, or moving parts and thus offers numerous benefits compared to traditional methods such as pumping.I am currently investigating the limits of the manipulation that can be done to microfluidic systems with light and AzoTAB. This project is inspired by the research conducted in Dr. Baigl's Lab in Paris, France, who is a collaborator of my faculty advisor, Dr. Yaofa Li. Currently, I am able to replicate the initial results that the Baigl Lab produced using the AzoTAB provided by Dr. Baigl. We propose to build upon the existing work to: (i) achieve photomanipulation of a droplet in a more complex microfluidic system; (ii) gain a fundamental understanding of the underlying physics by leveraging advanced flow diagnostics.

Stookey, Sam

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Music

Author/Contributors:
Sam Stookey

Abstract Name: **Writing an Original Composition for Clarinet and Piano**

Music has always been a passion of mine. I started learning about music when I was little and it has stayed with me ever since. As I grew older, an area of music that I started to become really interested in was composing. I started by writing short piano pieces, and I eventually made my way to writing two piece for a full wind band. This year, I challenged myself to a new task of writing a piece for solo clarinet accompanied by piano for my senior recital. Writing this piece was a challenge for me because I had to figure out how to make the clarinet part stand out in a way that would resonate with the audience. I went for a more jazzy and bluesy feel when writing the piece because I don't hear that style a lot when listening to clarinet music. I've only heard a few instances of jazzy clarinet, but I really like it and I wanted to add to it. Another challenging aspect of composing the piece was writing a piano part that fit witht the clarinet part. Most of my process when writing the piano part was experimenting with different chord progressions until I found one that fit. The piano doesn't get as many moments to show off as the clarinet does, but I still tried to give the piano part its own moments to shine. Another key feature of the piece is that it shifts character frequently. So some parts may be faster and more upbeat, whereas others may be slower and more moody. All of these made for a valuable learning experience, as I this was the first piece I ever composed for solo clarinet and piano.

Storey, Joshua

Institution: *MN - Bemidji State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Joshua Storey,
Emma Olson,
Ashley Jensen

Abstract Name: **Biochemical Analysis of Non-Protein Coding RNA LINC00298 and Its Expression in Early Onset Alzhimers.**

Alzheimer's is a terminal-neurodegenerative disease which causes neuronal loss in the brain. This disease affects 5.6 million people a year over the age of 65 and is the most common diagnosis among Dementia patients. Data meta-analysis of Alzheimer's patients has found that specific genes, when expressed, may lead to the development of Alzheimer's. One gene of interest is LINC00298 which is a non-protein coding RNA in the brain that is present in Early-Onset Alzheimer's. Very little is known about the impact of this gene during development. Our research team's focus is to biochemically and biophysically analyze LINC00298. Working in collaboration with the School of Pharmacy at North Dakota State University, using Circular Dichroism and Cell Mobility Shifts, researchers were able to identify that the gene depends on Mg2+ using the electrostatic interactions to undergo significant structural changes upon binding. Additionally, through the use of Mass Spectrometry in coordination with the University of Minnesota Minneapolis, Center of Mass Spectrometry and Proteomics. The LINC00298 gene was biotinylated at the 3' end and bound to streptavidin beads. This testing allowed for an understanding in its interactions with enzyme metabolism as well as protein translation. This new information gives insight on the importance of the gene and will potentially assist in finding solutions for Alzheimer's in the future.

Stork, Parker

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Computer Science/Information Systems

Author/Contributors:
Riley Basaran,
Parker Stork

Abstract Name: Cybersecurity in Microgrid Environment

Today's electrical grid infrastructure reflects a trend towards the integration of computer network technology with traditional industrial control systems. This synthesis, often referred to as a "smart grid" would allow for more efficient transmission of electricity, reduced overhead costs for both producers and consumers, reduced peak demand, and more. However, it faces more critical cyber threats since it is the lifeblood of the nation's economy and vital to the health and safety of all residents. In June 2021, Colonial Pipeline paid roughly $5 million in ransom to hackers, and JBS paid $11 million ransom after a similar cyberattack. A report released by the Treasury Department found that around $590 million had been paid by victims of ransomware to their attackers in the first six months of 2021, as such attacks skyrocketed. Given the nature of computer network technology and the increasing prevalence of both state-sponsored cyberattacks and cyberterrorism, there is a clear need to harden such infrastructure to prevent its compromise. Our team in this cybersecurity microgrid testbed project is funded by the WiSys Ignite Grant, where we explore and study the possible cyberattacks against a microgrid. We first survey potential cybersecurity attacks, develop penetration techniques on a scaled-down version of a smart grid, and study the patterns of the successful cyberattacks. Referred to as a "smart microgrid", we attempt to infiltrate and disrupt it in order to better understand its weaknesses and the real-world implications of cyberattacks on critical industrial infrastructure and industrial protocols that are often overlooked.

Stover, Emily

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Marissa Niehoff,
Miikayla Schuebel,
Charlotte Clark

Abstract Name: Fostering collaboration between parents and speech language pathologists : What impact do motivational interviewing strategies have on parent-child reminiscing intervention?

The literature on parent-child reminiscing conversations from the various disciplines, including developmental psychology and communication sciences and disorders, indicates that these brief and routine conversations about shared, past experiences can have a positive impact on a child's developing language, cognitive, and socio-emotional skills. However, families can reminisce in a variety of styles depending on their culture. Motivational interviewing is a counseling style that aims toguide clients toward developing their own solutions as grounded in their personal values and priorities. With our project we ask the question, "What impact do motivational interviewing strategies have on the collaborations of parents and clinicians of different cultural backgrounds during reminiscing interventions?" To answer this question, we have thus far recruited two families- onemonolingual English speaking family with a preschooler diagnosed with a language delay.; onebilingual family (English and Japanese) with an adolescent boy diagnosed with ASD and TBI. We are video recording our collaborations and parent-child reminiscing. Inductive methods of analysis are employed to identify behaviors that contribute or interfere with effective collaboration between the clinician and parents. Collaboration methods will be refined after initial analysis and additional families recruited for further study. Understanding ways to foster better collaboration with families is essential to creatingindividualized and culturally sensitive interventions.

Stovey, Hayden

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication Science and Disorders

Author/Contributors:
Hayden Stovey,
Ciara Ladick

Abstract Name: **Exploring the Role of Knowledge and Topic Interest in Predicting Mind-Wandering Among College Students in a Night Class**

Purpose: In this study, students self-rated topic interest, familiarity and mind-wandering during and after weekly class sessions. Attention and engagement during class is a crucial aspect of learning (Szpunar et al., 2013). Mind-wandering is a phenomenon that occurs when the mind shifts thoughts from the topic that is being presented to other internal thoughts (Smallwood; Schooler, 2006). Mind-wandering is associated with reduced academic outcomes, including reduced recall of lecture-based content (Risko et al., 2012), and is associated with working memory capacity, intentionality, motivation and increased time on task (Soemer; Schiefele, 2020). Further investigation into the effects of topic interest and topic familiarity may provide additional insights into modifiable factors influencing mind-wandering within the college classroom.Methods: For six consecutive weeks, students in an undergraduate night class were surveyed midway through each class and at the end of each class. At both points in each class session, students were anonymously surveyed regarding their interest level in the course content presented in that class, as well as their familiarity with the topic and the degree of mind-wandering that occurred during class. Mind-wandering was assessed via the five-item Mind-Wandering Questionnaire (MWQ; Mrazek et al., 2013).Relationships will be discussed related to the variables being investigated. Additionally, applications of findings to student self-efficacy, responsibility and metacognitive learning strategies will be discussed as will potential strategies to mitigate mind-wandering during class.

Strandlien, Macy

Institution: *MN - Bemidji State University*

Discipline: Business

Author/Contributors:
Macy Strandlien

Abstract Name: **What are universities in the upper Midwest doing to prevent sexual violence on campuses?**

A public health priority should be preventing sexual violence on college campuses. According to a 2019 Association of American Universities survey of nearly 182,00 students, 13% of college graduate students reported nonconsensual counter by physical force or an inability to consent. Sexual violence on campuses is persuasive and more prevalent at college compared to other crimes. Colleges have responsibility to prevent sexual violence on their campus through bystander intervention programs, resistance education, and other methods. Available evidence suggests that sexual assault prevention programs can be effective in producing desirable changes in attitudes and behavioral intentions, at least as measured immediately after participation in programs. Many campuses require a program in the beginning of the year as a part of orientation, but do not provide extra support or awareness throughout the remainder of the year. What measures are university's taking to prevent sexual violence among their students. Researchers want to understand the phenomena of sexual violence happening on these college campuses.A survey developed in Qualtrics will be distributed on social media to capture data from a minimum of 100 respondents 18 years of age or older, of any gender who attend a college university in the Mid-West.An exploratory study will be conducted using a non-probability judgment sampling method. A sample size of 100 respondents will be drawn from the population of students 18 years old or older, any gender, and who are attending college in the Mid-West. Data will be analyzed using descriptive statistics, cross tabulation, and triangulation to determine, 1)effective education and training prevention methods in universities, 2) effective support services for students, 3) expectations for personal responsibility in prevention, 4) effective awareness and prevention campaigns to make campuses safer.

Straub, John

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: English/Linguistics

Author/Contributors:
John Straub

Abstract Name: Postmodern Media as a Promotion of Women&#65533;s Mental Health: Classical Literature Juxtaposing Contemporary Mediums

In comparison to classical and canonical literary texts, contemporary pieces of media, such as the television show BoJack Horseman, have a newfound edge by bringing a postmodernist perspective into the representation and destigmatization of mental health and women. BoJack, for instance, contrasts anthropomorphic female animals with human women and identifies what mental wellness means to each. Furthermore, classical literature has laid the groundwork for contemporary mediums of storytelling, which I argue have the ability to be a novel representation of mental health and women by using a postmodernist framing, creating empathy for a neurotypical audience as well as offering solidarity to women who experience complexities of mental health. I examine three different pieces of media having little to no scholarly research on them, but are just as worthy of being viewed and celebrated as canonical literature is on the subject of women's mental health: BoJack Horseman additionally provides a meta-commentary on how industries disingenuously support women's mental health to earn public favor; the intertextual play 4.48 Psychosis is both a poetry collection and a performance piece, allowing for numerous interpretations to be made about how women experience depression; and the video game Milk Inside A Bag Of Milk Inside A Bag Of Milk is able to destigmatize conditions like schizophrenia by immersing the reader in the mind of a young woman who experiences it, allowing them to empathize with her struggle through the utilization of absurdist language and visuals.

Straus, Matthew

Institution: ***IL - Augustana College***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Matthew Straus,
Ben Ford,
Bethany Schorr,
Michael Reisner

Abstract Name: Drivers Of Macroinvertebrate Community Integrity Within Mixed Urban And Agricultural Dominated Mississippi Tributary Watersheds

The “urban stream syndrome” refers to a multitude of impacts caused by urbanization including flashier hydrograph, elevated concentrations of nutrients and contaminants, altered channel morphology and stability, reduced biotic richness, with increased dominance of tolerant species, reduced base flow and increased suspended solids.The drivers of these “symptoms” include impervious surfaces, piping in storm water drainages, habitat and forest loss, water supply and sewer leaking, and direct alterations to channel morphology and flow. The goal of this study was to assess the integrity of the macroinvertebrate community and determine the most significant drivers of such integrity at the catchment, riparian zone, and reach scales. Macroinvertebrates have been used to measure the overall health of the ecosystem and have been shown to be important in overall health in aquatic systems.A higher species diversity of macroinvertebrates increase the health of the stream, a poor FBI for a stream can indicate that an impairment has occurred and further planning, management and restorative processes would be necessary.We used the Family Biotic Index (FBI) to assess the health of our sites. The family biotic index (FBI), a measure of integrity in relation to organic pollution tolerance was calculated. The FBI value is assigned based on the macroinvertebrate tolerance to pollution. The figure below illustrates FBI values and characterizes whether the aquatic system health is poor, fair, good or excellent.

Strehlow, Lillian

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Benjamin Young,
Scott Clark,
Lillian Strehlow

Abstract Name: Campuswide Sustainability: Designing an Early Intervention Training Module to Cultivate a Sustainably Minded Culture

Implementation of sustainable practices are being pursued at universities across the globe. However, getting student buy-in to adopt sustainable habits can be challenging. Over a seven-year period, the University of Wisconsin-Eau Claire has collected data on student behavior as they discard lunchtime waste and conducted audits on the waste found in the compost, recycle, and landfill bins. That data has been used in multiple intervention attempts to educate students on proper waste-sorting when having access to those bins. These interventions have had limited success in generating a statistically significant shift in student behaviors. During the 2022-2023 academic year, we are pursuing a new effort with the goal of preemptively educating students on multiple aspects of sustainability before they arrive on campus. Our university currently requires incoming students to participate in online training modules on topics such as sexual assault awareness (Title IX), equity diversity and inclusion, and information security. We have received approval to add a sustainability-focused online training module for incoming students. We are designing a module that will focus on four sustainability topics: campus-wide sustainability goals, public transportation routes, using the campus's reusable food container program, and proper waste-sorting habits. Each topic will contain microlessons consisting of readings and videos. Each microlesson has questions that must be answered before the student can progress. Our goals are to educate students on effective sustainability practices, encourage them to adopt those practices as incoming students, and for them to see our campus as a place that values sustainability. We will assess the effectiveness of this intervention through future waste audits, observational studies of student behavior and survey responses. Our training module is intended to be used by all incoming students and we expect that our audits and survey results will reflect wider adoption as more and more students complete the training.

Strickland, Dilynn

Institution: ***AR - Arkansas State University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Emilio Soriano Chavez,
Dilynn Strickland,
Yuto Morishita

Abstract Name: String in Switch ? Usage Analysis and Maintainability

The release of Java 7 in 2011 introduced the capability of using character sequences, hereby referred to as String objects, in switch expressions and their corresponding case statements. This String in Switch language feature allows producing readable and better-performing code when compared to commonly used alternatives like if-else statements, often nested and difficult to modify and maintain. As a consequence, code maintainability can be simplified by incorporating this feature into a project. Our research focuses on the usability analysis of this new language feature, with the goal of observing its usage over time across selected Java-based open source projects. In addition, we perform a comparative analysis between sample statements and equivalent if-else expressions to discuss the maintainability of the code as it relates to the advantages of String in Switch. For analyzing a project, we perform a file expansion that generates revisions for every commit in the project's repository. Subsequently, we build Abstract Syntax Trees (ASTs), allowing us to identify the presence of String in Switch statements present in a target file. With this information, usage-over-time plots are derived, allowing us to observe the occurrence of String objects in switch expressions throughout a project's development history. Of the analyzed projects, our research shows that the String in Switch feature is not widely used, despite its capability of generating cleaner and readable code. We conclude that some of the analyzed projects may be mature, which reduces the need to rewrite functional code into equivalent String in Switch statements. These findings are useful not only for programming language designers in understanding the tendency to utilize new features, but also for instructors in teaching programming languages in a limited amount of time.

Stroh, Grace

Institution: ***WI - Wisconsin Lutheran College***

Discipline: Mathematics

Author/Contributors:
Grace Stroh,
Merrill Storch,
Edmund Robbins,
Nezamoddin Nezamoddini-Kachouie

Abstract Name: Mountain Glacier Segmentation Method Using Landsat Satellite Imagery and L*a*b* Color Space

Anthropogenic climate change has caused unprecedented warming of the Earth's surface. As temperatures rise, having accurate models for future climate scenarios becomes increasingly urgent. Conveniently, the change of a glacier's size can be used as a physical indicator of the rate of climate change. However, the remote nature of glaciers renders direct measurement impractical. For this reason, researchers have been working to find an accurate remote measurement technique to calculate the area of glaciers. Since there are almost 200,000 glaciers around the world, such a technique also needs to be efficient and ideally automated. Unfortunately, rock debris camouflages many mountain glaciers and further complicates methods to accurately measure glacier area.This project used Landsat satellite images to identify glaciers and segment, or distinguish, them from their surroundings. A color-based image segmentation method was developed to find the area of glaciers from the Landsat images. This semi-automated method was then implemented on images of Gorner Glacier in Switzerland and Franz Josef Glacier in New Zealand. For this method, three satellite color bands were compiled into a false color image and then segmented in the L*a*b* color space. The transformation from the typical RGB colorspace to the L*a*b color space allowed the red "land" pixels to be easily eliminated, leaving behind the blue pixels of the glacier for area calculation. The method was visually successful in segmenting the exposed ice, but it could not differentiate the mountain from the debris-covered ice with high precision.

Stuart, Alexander

Institution: ***VA - George Mason University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Alexander Stuart,
Violetta Rostobaya,
Kunal Gide

Abstract Name: Mechanical and Surface Characterization of 3-D Printed PLA-HA Composite

The materials currently used to construct replacement hip and knee joints for humans are stainless steel and titanium. Whilst these materials are strong and fairly biocompatible, they are expensive and can cause adverse long term side effects such as stress shielding. The aim of this project was to construct and evaluate an alternative to these materials, specifically 3-D printed Polylactic Acid and Hydroxyapatite composite (PLA-HA). PLA-HA is a polymer composite of Polylactic Acid (PLA) and Hydroxyapatite (HA). PLA-HA is relatively cheap, very biocompatible, and can be easily adapted for use in a 3-D printer. This vastly simplifies the process of manufacturing unique parts with complex geometries such as a replacement joint. Raw PLA-HA was created in-lab using three different manufacturing methods. These manufacturing methods were Dry Speed Mixing, Wet Speed Mixing, and Magnetic Stirring. The raw PLA-HA was then converted into filament for use in a 3-D printer using a uniaxial filament press. The PLA-HA filament was then to be used to 3-D print three different samples for mechanical testing for each manufacturing method. These samples will be subjected to a variety of tests to characterize their mechanical and surface properties. These tests include destructive tensile tests, micro-indentation, and wear tests. These mechanical and surface properties will then be evaluated to determine if they are sufficient for a joint replacement application. The four different manufacturing methods will also be compared against one another to determine which method produces samples with the desired mechanical properties and distribution of hydroxyapatite throughout its matrix.

Stuck, Evelyn

Institution: *MN - University of Minnesota - Crookston*

Discipline: **Biology**

Author/Contributors:
Evelyn Stuck,
Paige Shwaluk

Abstract Name: **Search for Antimicrobial Producing Strains in Minnesota Bogs**

Microbes in Minnesota bogs are a largely underrepresented area of study in the search for new antibiotics. New or unstudied species of Minnesota bog bacteria have the potential to combat the current and worsening problem of multi-drug resistant pathogens. The purpose of this study is to identify if lower pH levels are more suitable for different bacterial colonies as opposed to normal pH levels, and determine if these microbes exhibit antimicrobial properties against safe relatives of the ESKAPE pathogens. Methods used reflect the protocols from the Tiny Earth - Studentsourcing Antibiotic Discovery Project. Soils were processed and microorganisms were isolated from the different locations of bogs in Minnesota and grown on various media: 10% Tryptic Soy, Glycerol Yeast Extract, Nutrient Broth, and Actinomyces media at two pH levels (3.8 and 4.8). More acidic pH levels were selected as Minnesota bog soils are more acidic than other soils. Selected colonies were tested on pathogen plates. Microbes found to have antimicrobial properties were further purified on appropriate media and incubated at room temperature. Microbial growth and isolates are compared to ongoing experimentation of soil microbes isolated on “regular” pH media. Characteristics of the pure cultures of the isolates grown on “low pH” media that demonstrate inhibitory activity will be reported. This research will aid in the process of developing new antimicrobial agents that can be used for advancements in the medical field. This study will serve as a baseline for future antimicrobial research in Minnesota bogs.

Stucker, Haydn

Institution: *NC - Elon University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Haydn Stucker,
Ryan Mattfeld

Abstract Name: **Optimization of Aerial Sensor Suite to Autonomously Detect Wildfires**

Over the past several years, wildfires have become increasingly more extreme, destroying acres of nature and putting people’s lives in danger. Recently, research in this field has turned to aerial robotics and advanced sensor suites as an initiative to identify wildfires sooner. This essay investigates scholarship on the use of unique sensor types and their positioning to enhance the efficiency of rapid fire detection. However, these works have not adequately investigated a higher order of sensor fusion in application with aerial drones. This paper addresses this gap by considering the effectiveness of three types of sensors and multiple combinations of sensors in detecting fires from an aerial perspective. The three sensors that will be tested are RGB cameras, thermal cameras, and LiDAR. Specifically, the project will analyze the strengths and weaknesses of each sensor, then compare sensor suite combinations that create the lowest false-alarm detection rate. The data will primarily be quantitative to reflect individual sensor performance, providing more accurate insight into sensor fusion performance on the final drone. In conclusion, this project will highlight what sensor arrangement suite is more efficient in regards to detecting fires from an aerial drone, and will be useful in determining where future research should go in testing larger, more advanced sensor suites on superior robotics platforms.

Stumo, Sam

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jordan Langlois,
Zach Caterer,
Connor McKeown,
Sam Stumo,
Rahul Gomes,
Michael Walsh

Abstract Name: **Deep Learning and Feature Selection for Classification of Kidney Tissue Microarrays**

Renal function is an essential marker in the classification of renal disease and clinical symptoms of renal failure develop when there is 15% renal function. In this study, we used infrared spectroscopic (IR) imaging to investigate biomolecular markers from renal transplant biopsies. These images are used for the classification of regions of fibrosis from biopsies containing renal cell carcinoma (chromophobe and oncocytoma) and the prediction of fibrotic proliferation using biochemical signatures. IR spectroscopy is a diagnostic approach utilizing human tissue to label biochemical signatures. Images are captured in several hundred wavelengths in the infrared region of the electromagnetic giving researchers access to more information than traditional RGB images captured by a microscope. While images captured in several bands are great for disease diagnosis, it poses significant challenges for manual cell review by a pathologist. To address this issue, a fully automated pipeline for image processing is being explored. Preliminary research involves identifying feature importance using various algorithms, each of which returns the significant spectral bands necessary for detecting regions of fibrosis. The outputs are ranked and compared to find the first 150 most important features. After feature selection, a deep learning model called UNet will be applied for the classification and identification of fibrosis. Our results will then be compared to the discriminate analysis of the Bayesian classification used in clinical applications.

Stumpf, Rachel

Institution: *MN - St. Olaf College*

Discipline: **Mathematics**

Author/Contributors:
Annika Cleven,
Khang Huynh,
Rachel Stumpf,
Jaime Davila,
Douglas Beussman

Abstract Name: **Human Scent Analysis in Support of Tracking Dogs**

Tracking dogs can follow the scent of a person for more than a mile after they have left the trail. The current scientific hypothesis about how this is possible involves dogs smelling the volatile organic compounds (VOCs) that emanate from dead skin cells shed as a person moves. However, data from tracking dogs is not admissible in a court case as it is not understood how this scientifically occurs. Our data involves swabs of an individual's left and right arms, using the technique of Gas Chromatography Mass Spectrometry (GCMS) to identify and analyze the amounts of compounds that make up a scent. We have found that the data of an individual's left and right arms is more correlated than two random people in the data set, suggesting that each individual has a unique scent profile. Through the comparison of left and right arms from the same individual we have noticed the same compound is not present in both due to the necessity of the GCMS reaching a threshold amount for a compound to be recognized. Using Principal Component Analysis (PCA) we found that 23.1% of the variation in individuals can be explained through the first two principal components. PCA has also determined that heptanal, acetone, and hexanal, which are commonly found in every individual, are the compounds that explain the most variation between scents. Furthermore, PCA shows that there is a difference in clustering between children (under 18 years old) and adults (18+ years old). Our investigation has shown that the age of an individual contributes to the scent profile, an individual is more correlated to oneself than another, and that there are top VOCs that contribute to the variation in individuals scent profiles.

Sturgill, James

Institution: ***KS - University of Kansas***

Discipline: Engineering/Applied Sciences

Author/Contributors:
James Sturgill,
Y. Elaine Zhu,
Ali Hatami

Abstract Name: Scalable Nanomanufacturing of Hierarchical Multicomponent Polymer Assemblies Using Integrated Electrospinning and Microfluidics

Liquid-liquid biphasic complex coacervation occurs when two oppositely charged polymers in salted aqueous solution are mixed and spontaneously separate into one polymer-rich dense phase and one polymer-poor supernatant phase. The use of complex coacervates is widespread in the food and pharmaceutical industries for microencapsulation of molecules and biomolecules. However, the solution process of polymer complex coacervates is slow and limits their industrial application. In this work, we have explored ac-electrospinning to enable rapid and facile manufacturing of polymer coacervate nanofibers for scalable mass production of composite polymer membranes. Distinct from dc-electrospinning, we have found the high tunability of ac-electrospining on the structure of coacervate nanofibers. Specifically, the effects of ac-friend frequency and voltage on the continuous nanofiber formation of two distinct complex coacervates, poly(ethylene oxide) (PEO)-metatungstate coacervate and poly(styrene sulfonate)-branched polyethylenimine (PSS-bPEI) coacervates are investigated to prove the generality of ac-electrospining complex nanofibers. Furthermore, we explore electrospun PSS-bPEI coacervate materials to remove trace organic contaminates for water treatment.

Su, Ning

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Yinan Song *Ning Su* *Tan Jiao*

Abstract Name: Exploring The Impact Of Educational Exchange Activities Between UWEC And CIT Project

With the development of educational internationalization, more and more Chinese students choose to study abroad. While ample studies discuss international students, less research examines exchange programs. To better understand the impact of exchange activities on international students and scholars, this case study explored the positive experiences and challenges faced by students and exchange scholars in the University of Wisconsin Eau-Claire (UWEC) and Changshu Institute of Technology (CIT) 1+2+1 program.The research team adopted surveys and interviewers to collect data from exchange students, visiting scholars, and administrative personnel. The results revealed both external and internal factors that accounted for the participants' experience, such as students' perceptions of values in speaking up, sense of fitting in, and the importance/lack of a multilingual classroom environment. The participants shed light on gender, identity, language, culture, education, and communication style. Additionally, results showed that the study abroad experiences influenced students' networking with diverse friends and a better understanding of their own cultural values and prejudices. This project aims to offer implications for future exchange programs between Chinese and American universities, advocate for thoughtful and mutually beneficial cross-cultural communication, as well as offering suggestions for exchange students.What made this research project distinctive and meaningful was that the entire research team consisted of international students and a faculty mentor from China. Both the topic of the project and the background of the researchers represent an effort to promote equity, diversity, and inclusion locally and globally. The research team was able to bring in an authentic, culture-relative, and empathetic lens to examine the gains and challenges experienced by the participants. This project hopes to inspire more international students to engage in faculty-student research experience, enhance their professional and career skills, and amplify their voices.

Suhail, Zoha

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Nursing/Health Science

Author/Contributors:
Zoha Suhail

Abstract Name: Standardizing Documentation of Advanced Care Planning (ACP) Conversations

Advanced care planning (ACP), the process of supporting patients' understanding and sharing their personal values, life goals, and future medical care preferences with the aim of ensuring patients receive the care they desire (Sudore, et al, 2017), is a complex yet necessary part of healthcare. ACP increases healthcare providers' adherence to patients' wishes and desired care (Bernacki et al., 2014) and provides context for future discussions with additional medical providers (Walker et al., 2018). Unfortunately, a community-academic healthcare system did not have a consistent way to document ACP in the healthcare system's electronic health records (EHR) making it hard for the healthcare team to communicate the patient's ACP. Aiming to increase ACP, an outpatient oncology department within a healthcare system implemented a multi-intervention research project with one interventional prong addressing the documentation of ACP. The research team sought to address ease of documenting, determining consistent information to capture, and identifying a consistent location in the EHR to store this information as an additional component to the original educational intervention. In partnership with the healthcare system's Health Information Management Services (HIMS), the team developed a tool within the EHR that enables the healthcare team to easily identify the presence of an ACP document and a Goals of Care (GOC) template. Training, ongoing feedback, and coaching were also provided to support the providers. Data was gathered from randomized patient charts for each provider from August 2021 to August 2022, monitoring GOC discussions, the corresponding documentation, and the location of documentation will be analyzed to demonstrate the impact of the invention. It is hypothesized that the development of the GOC template and search feature will increase the thoroughness of the documentation of ACP.

Sulkouskaya, Darya

Institution: ***FL - University of Central Florida***

Discipline: Public Health

Author/Contributors:
Darya Sulkouskaya,
Fernando Rivera

Abstract Name: Limited Availability of Specialty Medical Care in Puerto Rico

Currently, Puerto Rico stands as a commonwealth of the United States of America, giving it some independence in its internal operations, but functioning ultimately under the federal government of the USA. This has placed Puerto Rico in an economic debt crisis as a result of policy changes made over the past several decades. In this time, Puerto Rico's healthcare infrastructure has been modified to model the system in place in the mainland United States, disregarding the need for regional medical care well-suited for the Puerto Rican population. As a result, the healthcare infrastructure of Puerto Rico is suffering, affecting rural and non-metro areas disproportionately as medical services are concentrated in urban centers. Through privatization upheaval, debt accumulation, and a prevalent pattern of physician migration, Puerto Ricans are unable to receive adequate healthcare on the island. Literature on the subject focuses on the migration of physicians from Puerto Rico to the mainland United States, as well as the aging population of doctors on the island. However, it fails to address the lack of not merely physicians, but rather physicians of concrete specialties. This low specialist availability has been seen to affect those with chronic diseases, such as diabetes and heart disease, most, causing an imbalance as these conditions are those that currently require the most attention. This review aims to address the gap in published literature and pinpoint the specialties in need of physicians through a partnership with the Health Industry Information Platform of Puerto Rico, the largest database of physicians on the island and their practice locations. The resulting data points to which regions of the island lack specialty care most and emphasizes the need for healthcare reform as the system in place is unable to retain its physicians and ensure the medical safety of its people.

Sullivan, Kamaryn

Institution: *MO - Stephens College*

Discipline: **Biology**

Author/Contributors:
Kamaryn Sullivan

Abstract Name: **Optimizing Staining Methods for Arabidopsis Thaliana for Future Studies Understanding Interactions Between Lipopolysaccharide and Glutamate-Like Receptors**

Plant growth has the potential to serve as a model to study the impact of lipopolysaccharide (LPS) on neurophysiology in mammals. Lipopolysaccharide (LPS) is the most common microbial mediator in sepsis and septic shock. More specifically, LPS is an endotoxin from gram-negative bacteria that binds to glutamate receptors (GLR) at the neuromuscular junction. Plants and mammals share highly conserved glutamate-like receptor (GLS), and glutamate serves as a neurotransmitter in animals as well as an essential amino acid in plants and animals. It is believed that LPS binds to glutamate receptors, which block the glutamate response. Understanding the role of LPS on plant root growth can lead to cost-effective avenues to study mechanisms related to septicemia. Previously, the exposure to glutamate prevented primary root growth and promotedlateral root growth in the original root. Glutamate acts as an exogenous signal at the root tip. Because of the similarities, we chose to use theArabidopsis thaliana because of their glutamate- like receptors which are similar to the glutamate receptors in humans. The objective of this project was to optimize growth and visualization methods for Arabidopsis thaliana while using staining techniques traditionally used on bacteria prior to the addition of LPS. Additionally, methods developed within this study have been piloted within a General Chemistry Laboratory that offered a course-based research experience (CURE). Within this study, we propose a staining technique that can be used to visualize root growth during exposure to molecules or toxins, such asglutamate LPS, respectively. Furthermore, we propose a cost-effective staining technique that can be implemented into laboratory classrooms. It appears that glutamate supports root growth after approximatelyone week under ultraviolet light, and the lack of glutamate hindered root growth.

Sullivan, Taya

Institution: *WV - West Virginia University*

Discipline: **English/Linguistics**

Author/Contributors:
Taya Sullivan *Sergio Robles Puente* *Jonah Katz*

Abstract Name: **Lenition is Scalar Across Spanish Consonant Sets: Implications for Mental Representations of Language**

Lenition—that is, the systematic weakening of consonants—is a thoroughly-studied linguistic process which often acts on consonants in particular grammatical (or, in the fields of phonetics and phonology, prosodic) positions. This process has been documented in a wide variety of languages, including Spanish. Previous papers on Spanish lenition have primarily discussed the acoustic nature of /bdg/ voiced stops, and, to a lesser extent, /ptk/ voiceless stops. The present study thus seeks to broadly measure lenition processes in all consonant sets in the Spanish language, grouped based on manner of articulation (that is, configuration of vocal folds, tongue, lips, etc. in producing a particular sound) as follows: /ptk/ voiceless stops, /bdg/ voiced stops, /n/ nasal, /lr/ liquids, /s/ sibilant, and /fθ/ fricatives. To elicit lenition at varying rates, native speakers of the Northern Peninsular Spanish dialect were recorded reading investigator-constructed sentences aloud in a laboratory environment. Recordings were then analyzed in Praat acoustics software, with particular attention being paid to variation in consonant intensity and duration relative to prosodic environment (in order of low to high: word-medial; word-initial/final; utterance-final; phrase-initial/final; intonation-initial/final). Expected conclusions are that lenition, as defined by a traditional model of phonological features, will be scalar relative to lower prosodic level, that greater lenition will be acoustically indicated by lower-magnitude intensity slopes and thus a shorter duration, and that all consonant classes will exhibit some degree of acoustic lenition processes. Such findings will have implications for the rules that govern our mental representations of language; that is, whether the process of lenition manipulates categorical symbolic representations of sounds (that is, operates along a contrastive model of phonological features) or instead pertains to continuous physical parameters of speech (that is, operates along an acoustic/phonetic model).

Summitt, Megan

Institution: ***AL - University of Alabama***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Megan Summitt,
Todd Freeborn,
Memorie Gosa

Abstract Name: Comparison of Metrics for Activity Differentiation Within Oral-Facial sEMG Datasets

Introduction: Dysphagia is characterized as abnormal swallowing and can result from conditions including dementia, Alzheimer's, and Parkinson's [1]. Rehabilitation can use biofeedback from surface electromyography (sEMG) which captures electrical muscle activation during swallowing. However, sEMG also captures extraneous movements.This case study aimed to identify metrics to differentiate sEMG data of swallowing events from extraneous movements.Materials and Methods: One participant completed 10 movement trials while sEMG data was captured from orofacial and suprahyoid locations. Each trial consisted of four tests for: cough, talking, throat clearing, and head movements. Metrics of sEMG amplitude (difference from baseline) and activity duration (near baseline to near baseline surrounding a peak) were analyzed.Results and Discussion: Swallows had an average amplitude of 106.8 μV (oral) and 75.4 μV (pharyngeal), whereas talking had averages of 85.2 μV and 38.1 μV meaning swallowing required greater muscle recruitment. Head movements had the highest average movement duration with 9.6 seconds (oral) and 7.8 seconds (pharyngeal) compared to 2.1 seconds and 2.34 seconds for swallowing. There were clear differences in the averages, but the high variability between trials prevented identification of clear threshold values.Conclusion: Amplitude and movement duration are two metrics to quantify events in sEMG datasets but were not sufficient to differentiate swallow and non-swallow movements from the conducted trials.Further research is recommended to investigate additional metrics in sEMG datasets for this differentiation or the fusion of metrics to make unique signatures of different event types.

Sun, Tianqi

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Papia Rozario,
Rahul Gomes,
Laney Ruehmann,
Tianqi Sun ,
Tyler Pham ,
Zhongyue Yu

Abstract Name: Exploring Hyperspectral Image Classification using Deep Learning

Classification of hyperspectral images is an important step of image interpretation from high spatial resolution imagery. Different studies demonstrate that spatial features can provide complementary information for increasing the accuracy of hyperspectral image classification. In this study, we propose a method of spectral-spatial classification of hyperspectral images that is based on a hybrid feature selection approach with stacked autoencoders. The resulting high-dimensional vectors of spectral features are classified by several supervised classification algorithms such as support vector machine (SVM), maximum likelihood (ML) and random forest (RF). The experiments are performed on several widely known test hyperspectral images. Preliminary results have demonstrated that the proposed method provides a higher accuracy matrix than existing traditional models.

Sundararajan, Sanjana

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Communication Science and Disorders

Author/Contributors:
Sanjana Sundararajan

Abstract Name: Virologic Characteristics of Breast Milk CMV Transmission

Human Cytomegalovirus (CMV) is a member of the ß-herpesvirus subfamily of the Herpesviridae family. CMV is the largest and most complex herpesvirus with a 235,000-dsDNA genome that encodes for about 265 open reading frames. CMV is a frequent cause of congenital infection and the leading cause of non-genetic hearing loss. In addition, CMV exhibits high genetic variability and infection with multiple virus strains has been documented in several populations including babies with congenital infection and children attending daycare. Postnatally acquired CMV infection does not cause disease or adverse outcomes except in very low birth weight infants. However, postnatal transmission of CMV to infants born to seropositive mothers has been shown to be a reliable setting to study the virologic characteristics of CMV transmission to healthy infants. The research examines virologic diversity in breast milk and in infants who acquire CMV via breastfeeding to determine the importance of genetic diversity of CMV strains on transmission. While most CMV seropositive mothers shed the virus in the breast milk, only about half of the breastfed infants will become infected during the first 4-6 months of life. In this study, I examine genotypes of envelope glycoproteins, gB (UL55), gH (UL86), and gN (UL73). In addition, genotyping of US28 will also be performed. I also compared the genotypic diversity of CMV virus populations in breast milk and in infants who acquire CMV via breastfeeding. The objective of the experiments was to compare the genetic diversity and CMV viral load in the breast milk between transmitters and non-transmitters. In addition, the duration of the viral shedding in breast milk was compared between the two groups.

Sundberg, Ezekiel

Institution: ***MN - Gustavus Adolphus College***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Quintin Morris,
Angelina Hathty,
Austin Carter,
Ezekiel Sundberg

Abstract Name: Yoga As An Approach to Mental Recovery 48 Hours After an Intense Workout

Background: Along with physiological changes, knowledge about yoga and meditation strategies for post workout mental recovery has been investigated. Results show that it improves mental clarity and reduces stress and anxiety levels. Purpose: The purpose of this study is to examine the effects of a 30 min yoga session on mental recovery 48 hours after a high intensity workout. Hypothesis: We hypothesize that if a yoga session is done immediately after an intense workout, it will produce greater mental recovery compared to those who do not participate in the yoga session. Methods: Twenty undergraduate students will complete a 30 minute intense workout. Following the workout, the intervention group will complete a thirty minute yoga/meditation session. The control group will not do anything outside of their usual routine. Conclusion: If our results align with our hypothesis, individuals can incorporate yoga into their exercise routine to benefit overall mental health and recovery.

Sundermeyer, Isacc

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Devon Schroeder,
Gabriel Clark,
Ryan Smith,
Isacc Sundermeyer,
Dylan Wells

Abstract Name: Perception of Information and Source Reliability B

The term misinformation is being used so frequently now that it has become an annoying word to represent almost nothing. The perception of whether information is valid seems to be very dependent on who is giving the information. There are many different factors that play a role in deciding whether a source is credible or not. In the US today we are seeing that individuals are siding with news sources that have a similar political ideology when deciding what is fact and what is misinformation. The purpose of this research is to determine what factors correlate with someone's suseptiblity to misleading information. The personal characteristincs being studied include racial/ethnic background of the messenger and receiver, political ideology of the messenger and receiver, news media sourcepreference, expertise level of the messenger and receiver, and percieved trustworthiness of the messenger. The study will use information about controversial topics given by various sources and determine the level of confidence the subjects have about the legitimacy of the information. Demographics regarding the subjects will be collected. A correlational analysis will be made between traits of the message sender and receiver and the rating of the source information. Data analysis will be completed in the spring semester of 2023.

Sunnarborg, Samantha

Institution: ***MN - Minnesota State University - Mankato***

Discipline: Physics/Astronomy

Author/Contributors:
Roman M. Faught,
Mark Gutierrez,
Samantha A. Sunnarborg,
Jeremy T. Derhaag,
Spencer A. Schoeck

Abstract Name: Radiation dose studies in fruit flies with 350keV electrons

The effects of beta radiation on fruit flies (Drosophila Melanogaster) were studied using the Applied Nuclear Science lab AN400 accelerator modified for electron acceleration and extraction. Dose-dependent effects up to 800 Gy have been observed, with significant effects well below the LD-50 dose for 2-day old larvae. These effects include reduced larvae and aborted development to adulthood. The goal of establishing a population of viable adults in samples showing clear radiation dose effects to study inherent radiation resistance has now been met. The data gathered in the process of this experiment will be used to further calibrate the accelerator for future research.

Surine, Katelyn

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: Minority Status and Mental Health

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Svendsen, Ashley

Institution: ***TX - Lone Star College***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Ashley Svendsen

Abstract Name: Expression of Femininity in Animated American Culture: She-Ra

This project examines gender expectations for American women from the 1980s to the 2010s as reflected and reinforced by animated entertainment series, such as She-Ra, which originally aired in 1985, then returned as a reboot in 2018. The series exhibits a leading female character, She-Ra, who changes in both character and appearance from the original 1985 iteration in accordance with shifting ideas of femininity in modern American culture. First, the research investigates ideas of gender inequality for women in American society, then the concept of gender schemas formed by observational learning, and lastly American feminist movements after 1970, each of which guides the study of the social, psychological, and historical contexts of both iterations of She-Ra. Analysis of gendered dialogue from the selected 1985 She-Ra episode reveals the social inequality women experienced in the 1980s, which is similarly continued in the 2010s, as supported by analysis of similarly gendered dialogue excerpts from the chosen 2018 She-Ra episode. Next, an analysis of She-Ra's costume design indicates that, due to constructed gender schemas, ideas of womanhood shifted from a strong feminine appearance in the 1980s to a more androgynous appearance in the 2010s. An analysis of character behavior finds that 1985 She-Ra exemplifies 1980s feminist ideas of reclaiming and redefining womanhood, while 2018 She-Ra exhibits post- and millennial feminist expressions of confidence in womanhood as a personalized and equal gender identity. The research thus concludes that, over time, gender expectations for women have been diverging from binary concepts of gender, a pattern that is demonstrated by animated American series such as She-Ra. Contemporary artists evidently have the power to create media that influences shifting cultural attitudes regarding how women and other gender identities are accepted and integrated into American society.

Swanson, John

Institution: ***IA - Iowa State University***

Discipline: Biology

Author/Contributors:
John Swanson *Anna Garbe* *Catherine Fonder*
Subin Mao *Long Que* *Donald Sakaguchi*

Abstract Name: Effect of Neurotransmitter Treatments on the Proliferation and Neurogenesis of Adult Hippocampal Progenitor Cells within a Microfluidic Device

Neurotransmitters provide an important role in chemical communication between differentiated neurons and target cells and potentially contribute to neurogenesis. The neurotransmitter dopamine (DA) and its precursor levodopa (L-DOPA) are prevalent throughout the brain and can modulate synaptic plasticity. Additionally, the neurotransmitter serotonin (5-HT) serves a major role in the function of hippocampal neurotransmission. In the present study, we have begun to evaluate the effects of DA, L-DOPA, and 5-HT treatments on the proliferation and neurogenesis of multipotent adult rat hippocampal progenitor cell (AHPC) neurospheres. We developed a microfluidic chip composed of two chambers separated by a set of intentionally misaligned micropillars that serves to mimic the blood-brain barrier (BBB). The chip design allows the diffusion of neurotransmitters from the source chamber to the adjacent chamber containing neurospheres. Cell viability, proliferation, and neuronal differentiation were evaluated on the AHPC neurospheres after exposure to DA, L-DOPA, or 5-HT. After immunocytochemistry was performed on the AHPC neurospheres, fluorescent images were captured and analyzed to determine the percentage of immunoreactive cells. Following DA, L-DOPA, and 5-HT treatments, no negative effects on cell viability were noted. AHPCs showed a statistically significant increase in proliferation and neuronal differentiation following DA treatment compared to the L-DOPA treatment. 5-HT treatment on these cells also showed a statistically significant increase in neurogenesis at the 5 μM condition compared to the control, while proliferation had no significant change. These results begin to provide insight into the role of neurotransmitters in regulating AHPC neurogenesis.

Swanson, Julia

Institution: ***MN - Minnesota State University - Mankato***

Discipline: Communication Science and Disorders

Author/Contributors:
Julia Swanson,
Gabby Stensland,
Ju-fang Liu

Abstract Name: Multicultural Perspectives in Aphasia

Language is the production of our thoughts, cultures, and lives. It converts our minds into a more concrete form that allows people to understand each other. It also associates closely with our habits and mentality. The speech-language-hearing sciences field is one of the whitest fields in the U.S. and most research is biased toward the white-dominant population while some racial and ethnic minorities are more likely to suffer severe strokes and disparities in long term outcomes. Whereas there is almost forty percent of non-white in the United States of America, signaling the existence of diverse mindsets in which the disorders and treatments cannot be concluded only from the existing data.The mental health, the related cultural background, and the customs of different ethnicities may broadly impact the therapy and the results. In the current speech-language-hearing science field, we barely examine clients through the lens of mental health and multiculturalism. This single subject design study is to explore diverse perspectives about aphasia reported by marginalized clients with aphasia. Two participants were interviewed about their views about aphasia. The interview questions were modified from an explanatory model approach proposed by Kleinman and Beeson (2006) to explore the participants' understanding of the meaning of illness. Thematic analysis will be conducted. The results of this study will help further understand and help meet the needs of individuals who belong to an ethnic minority group and are affected by aphasia.

Swanson, Justin

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Danielle Kmieciak,
Lily Boe,
Brayten Casey,
Bethany Rhodes,
Justin Swanson,
Kayla Wylie

Abstract Name: Role of Motivation on Academic Success B

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation is and how it impacts the academic success of college students. Factors that will be studied are intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation studens vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions addressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Swanson, Starr

Institution: ***CA - Los Angeles City College***

Discipline: English/Linguistics

Author/Contributors:
Starr Swanson

Abstract Name: It's All In Your Head: Cultural Hegemony In The Stepford Wives; Replicating Behaviors Of Oppressors

The Stepford Wives tells the story of Joanna, a housewife new to the community by the same name. The longer she lives there, the more she grows to believe that the other wives in this community are being turned into robots by their husbands. The novellas author, Ira Levin, thematically depicts a cultural hegemony in the community. Set in the 1960's, Levin depicts the Stepford husbands oppressing and controlling women with behaviors such gaslighting and sexual objectifications. Betty Friedan theorizes about this cultural hegemony from the same era in her work The Feminine Mystique. The Feminine Mystique speaks of a problem without a name, exposing a cultural hegemony controlled by men and oppressive towards women. Because of this hegemonic culture, the women of Stepford have learned to replicate the behavior of their oppressors. The Stepford wives unintentionally replicate this behavior by either sexualizing one another or gaslighting each other. This oppression not only causes women to harm one another, it causes division against them. Feminist Audre Lorde spoke of this division amongst women in her speech, "The Master's Tools Will Never Dismantle The Master's House," when she says: "Without community there is no liberation." In the novella, Bobby takes on the role of a perfect housewife after gaslighting herself into believing she is selfish and isolates herself from her friends as a result. The Stepford Wives exhibit is entirely a façade, which, in fact, teaches women to replicate their oppressors' behaviors. The men in this novel control and oppress women through the aforementioned behaviors. Women's replication of oppressing their own gender causes division amongst themselves. Levin's story is an allegorical representation of the 1960's cultural hegemony and its negative effects on women and on society in general.

Swearingen, Garrett

Institution: *WI - University of Wisconsin-Stout*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Garrett Swearingen

Abstract Name: **The Effects of the Construction of Masculinity and its Effects on College Age Individuals**

This project analyzed how masculinity is constructed and the effects it has on people who are and aren't considered masculine. Literature in anthropology, for example The Meanings of Macho by Gutman, points out that views of masculinity vary widely within and across cultures. This sparked my initial interest in finding more multicultural views on this topic on my college campus. First, I sent out a survey to a sample of international and domestic students at UW-Stout. The survey asked questions about the individuals' political ideology and a series of questions pertaining to their views on who can and can't be masculine, if they consider themselves masculine, and several questions that gauge the participants opinions on if certain types of masculinity are harmful. Next, I interviewed twelve people from a variety of political ideologies, race and cultural backgrounds, and genders. I will focus on that data for this project. My findings show that there are several reoccurring themes when it comes to the construction of masculinity, which I have coded as "non-generalizable," "social conditioning," and "generalization." Non-generalizable refers to the common view that masculinity comes in many shapes and sizes. Social conditioning is referring to how we treat children assigned male at a young age and how they are taught to act growing up. Generalization refers to how we as a society perpetuate stereotypes and label every individual that identifies or is masculine-presenting with those stereotypes. After discussing the similarities and differences in participant views around masculinity, I will discuss how this demonstrates growth and change in understanding of masculinity.

Sweeney, Jessica

Institution: *MA - Bridgewater State University*

Discipline: **Education**

Author/Contributors:
Jessica Sweeney

Abstract Name: **Utilizing Anti-Racist Pedagogy in the Modern U.S. Classroom**

This project examines how educators incorporate current scholarship on Critical Literacy, Post-Colonial Theory, and Anti-Racist Pedagogy and its practices into the modern classroom. Current research from these various scholars identifies the structural racism in U.S. education and provides feedback on how to address it in the classroom. However, most of this research falls within the context of higher education and does not permeate secondary education scholarship. The feedback provided by scholars often does not address the restrictions present within the regulated system that secondary education operates in. This project bridges the gap between theory and real world application by assessing the frameworks and regulations that guide and, in some ways, restrict the classroom today. This research addresses assessment practices within secondary education curriculum per state regulations and frameworks using Anti-Racist pedagogical practices. Given dominant assessment practices that fail marginalized students, it is important to examine ways in which educators can implement assessment practices that are equitable for all learners. Using the Massachusetts ELA Frameworks Reading and Writing standards, this research evaluates the systemic bias within the frameworks and offers solutions and suggestions. These recommendations, informed by current scholarship, tailor suggestions for higher education, and identify how they can be adapted to secondary education. My research conclusion affirms the necessity of the current curriculum with modified dialogue surrounding it's history, while introducing new Anti-Racist approaches and modifications to this curriculum.

Sweere, Rece

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Education**

Author/Contributors:
Rece Sweere *Nick Thompson* *Gabby LeClair*
Brady Berg

Abstract Name: **Perspectives on Teacher Shortage and Retention among K-12 Principals in Rural Areas**

There are currently 567,000 fewer educators in K-12 public schools as compared pre-coronavirus (COVID-19) pandemic, contributing to the high demand for teachers in the United States. School administrators have struggled to hire and retain quality educators. Previous studies emphasized the role of administrative support on teachers' retention. The purpose of the study was to explore the perspectives of school administrators on teacher shortage and retention.A total of 6 principals were recruited by snowball and purposive sampling from several Midwestern rural school districts. Demographics were obtained using Qualtrics. A semi-structured online Zoom interview was conducted inquiring about participants' perspectives on their role, how hiring and teacher retention are going in their school, and their perspectives on the teacher shortage. The interviews were audio-recorded and transcribed. Qualitative analysis methods were used with categorization based on grounded theory. After a team analysis, the researchers came to an agreement on the common themes and drew conclusions from the themes.The three main themes that emerged from the responses to the interview questions were: 1) teacher shortage with decreases in the number of applicants and emergency hiring, 2) COVID-19's impact on schools finding substitute teachers and supporting teachers switching their classes virtually, and 3) supporting new teachers with a mentorship program and mid-to-late career teachers with professional development opportunities.Participants emphasized the importance of listening to their needs and supporting their teachers to do their job. Participants also suggested that teacher education preparation programs could continue to work on developing future educators to become high-quality beginning teachers who are resilient in their profession to combat teacher shortages. Future study is warranted on teachers' perspectives and needs for school administrators' support in their position to narrow the gap between administrators and teachers.

Sweitzer, Madison

Institution: *PA - York College of Pennsylvania*

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Madison Sweitzer

Abstract Name: **The Challenging of Gender Norms in Pride & Prejudice**

Jane Austen wrote Pride and Prejudice in the 19th century when women had no rights. They were to marry for financial stability, take care of their husband and be obedient. (Hughes 2014) However, Austen's novel's main character Elizabeth Bennet challenged gender roles. I am using the novel Pride and Prejudice. As well as multiple peer-reviewed journals to back up my claims. Elizabeth kept her independence throughout the novel. She refused to marry for financial stability and only would marry for love. She never tried to please men. Jane Austen''s Pride and Prejudice was successful in showcasing the challenging of gender norms through the main character Elizabeth Bennet. She was a feminist heroine throughout the whole novel because she never conformed to the proper role women were placed. Austen writing Pride and Prejudice was a big deal because due to Austen writing a novel about gender norms being challenged, she also challenged gender norms in the real world. Austen represented her beliefs through the novel and that impacted her own life.

Swenson, Isaac

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Jenna Trzebiatowski,
Isaac Swenson

Abstract Name: **Spectroscopic Investigation of the Lowest Triplet State of Alpha-Pyrone**

Molecular triplet states are chemical species that have two unpaired electrons. Triplet states are formed through the process of electronic excitation, in which energy from light or other sources promotes an electron from one molecular orbital to a higher one. The unpairing of spins via triplet excitation imparts significant chemical reactivity to triplet states, because these species behave as diradicals.In this project, we are using laser spectroscopy to investigate the lowest-lying triplet state of the alpha-pyrone molecule. Pyrone isomers, having formula C4H4O2, are conjugated carbonyl compounds containinga six-membered ring, with an ether linkage inside the ring. In alpha-pyrone, the ether oxygen is in position 2 of the ring with respect to the carbonyl group. Previously, we studied gamma-pyrone, in which the ether oxygen is in position 4. We learned how the vibrational frequencies in the lowest triplet state of gamma-pyrone differ from the frequencies in the ground state.In our current work on alpha-pyrone, we use a tunable dye laser that produces light in the 375-400 nm range to promote a carbonyl lone-pair electron into the lowest π^* molecular orbital.This process creates the lowest triplet state, denoted T1(n,π^*). By using the cavity ringdown (CRD) spectroscopic technique,we can detect laser absorptions that excite various modes of vibrational motion in the T1(n,π^*) state. Theinformation we obtain using CRD spectroscopy is analogous to that availablefrom aninfrared spectrum of the ground state.Thetriplet-state vibrational frequencies measuredin this projectare allowing us to understand how the conjugation and ring strain in the alpha isomer differ from these properties in the gamma isomer. This information will help researchers in the field of synthetic photochemistry better understand reactivity of the pyrones.

Swihart, Abigail

Institution: *WI - Carthage College*

Discipline: History

Author/Contributors:
Abigail Swihart

Abstract Name: **The Teaching of Menstrual Health in 20th Century America**

This essay is about the transition of teaching menstrual health in America over the course of the 20th century. While originally menstrual health was a private matter saved for mother-daughter discussion, the subject was pulled into the public sphere after the Second World War. Young menstruators found themselves underprepared for menarche; sanitation and cleanliness became an American ideal, and the capitalistic nature of our nation brought upon us new menstrual products and puberty guides. Kotex and the Kimberly-Clark Corporation had big roles in these factors. Once the demand for equipping girls for menstruation was understood as a necessity with every new generation, these companies dedicated their time to fix this issue while also earning themselves a lot of money and becoming prominent household names. They sold new products and guides, as well as the importance of hygiene, by telling menstruators how often they should change (and buy) pads and the importance of keeping clean while menstruating.This essay uses popular puberty guides Very Personally Yours and “You’re a Young Lady Now” from 1948 and 1952, respectively, as primary source material of how young menstruators were learning about their bodies, as well as what was being taught. Secondary sources were pulled from a variety of books and articles, including works from Joan Jacobs Brumberg and Lara Freidenfelds, both well-respected women’s and medical historians. As this essay explores Brumberg and Freidenfelds takes on the transition of menstrual education and consumer behavior, a contrast in feminist opinion appears and is examined.

Swiniuch, Amanda

Institution: ***AZ - Pima Community College***

Discipline: Biology

Author/Contributors:
Amanda Swiniuch,
Jasmine Winkleblack

Abstract Name: Identifying Wild Bees Using DNA Barcoding

The purpose of this DNA barcoding project was to identify bees for the Tucson Bee Collaborative (TBC) to get an understanding of biodiversity of bee species in Arizona. This is important because Arizona is one of the largest bee biodiverse areasin the world. The TBC is a partnership between Pima Community College, the Arizona-Sonora Desert Museum and the University of Arizona. The mission of the TBC is to build a thorough database of allbees that are native to the Sonoran Desert Region, in order to ensure future conservation as the climate changes.In order to extract DNA, the leg of our bee was crushed and combined with proteinase K. The mixture was placed in a heated bath and vortexed, giving us the beeDNA. To make many copies of theDNA, we used a polymerase chain reaction (PCR). A cycler heated and cooled the DNA intermittently,resulting in more copies of DNA, specifically the CO1 gene, the "barcoding" gene. We used gel electrophoresis to verify that PCR was successful.After we obtained a quality strand of DNA, we sent the sample to a laboratory to be analyzed. We took both directions of the sequence and inputted them into DNA Subway.We could then compare and identifyour bee's DNA to sequences in DNA databases from Genbank and The Barcode of Life Database (BOLD).We successfully identified our bee to the species level. The bee was identifiedas a Lasioglossum microlepoides. Our results were published in BOLD. The information we generated will help future researchers better understand and conserve this species.

Swomen, Kimberly

Institution: ***IL - Trinity Christian College***

Discipline: Chemistry/Materials Science

Author/Contributors:
Kimberly Swomen

Abstract Name: Greening a Grignard

In our lab curriculum, we use a modified version of the diastereoselective synthesis of (+/−)-1,2-diphenyl-1,2-propanediol first reported by Ciaccio et. al.to offer a useful experiential companion to thinking about conformational isomers, Newman projections, and steric constraints typically covered early in an Organic Chemistry I course. However, introducing this diastereoselective reaction designed for second-semester students early in the semester challenges nascent student lab skills.Methyl iodide is a strong alkylating agent, and among the more dangerous reagents used in our lab. Although we initially sought to replace the methyl iodide with ethyl chloride, we found the Grignard preparation difficult with this weaker alkylating reagent. Instead, we began using a commercially available ethyl magnesium chloride solution.which has allowed us to avoid using the alkylating agent on site and limited our demand for the preparation of a more hazardous material elsewhere. This also improved flow-through times for the lab. We were able to achieve similar selectivity to the original research as observed by comparing melting point of our (+/−)-1,2-diphenyl-1,2-butanediol 115 °C to literature values of 115-116°C for the product expected by addition to the less hindered face and 105-106 °C for the diastereomer.We hoped to further adapt this reaction to use the analogous furoin molecule as a starting material instead of benzoin. The resulting (+/−)-1,2-difuryl-1,2-butanediol, unreported in the literature, decomposes from a reddish solid into a black tar from 54-59 °C, unfortunately making it unsuitable for our lab.

Syed, Nawal

Institution: *PA - Drexel University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Nawal Syed *Breanne Pirino* *Genevieve Curtis*
Andrew Gargiulo *Brody Carpenter* *Anuranita Gupta*
Jessica Barson

Abstract Name: **Sex-Related Differences in PACAP Expression in the PVT of Rats**

The paraventricular nucleus of the thalamus (PVT) and the neuropeptide, pituitary adenylate cyclase activating polypeptide (PACAP),are associated with motivated and affective behaviors, including alcohol drinking and binge eating, but while PACAP has been found to be densely expressed in the PVT of male rodents, this remains to be characterized in females. Prior research in male rats found that the peptide isoform PACAP-27 was more highly expressed than PACAP-38, and that PACAP-27 expressionwas heavier in the posterior than anterior subregion of the PVT. The purpose ofthis research was to determine if there are sex-relateddifferences in the expression and distribution of the PACAP isoforms in the PVT. We performed fluorescent immunohistochemistry for PACAP-27 and PACAP-38 on tissue containing the PVT from adult, male and female Sprague-Dawley rats (n= 5/sex), followed by confocal microscopy and ImageJ analysis. The percentage of DAPI cells that co-labeled with PACAP-27 was greater in females than in males (52% vs. 44%) and, as in males, increased from anterior to posterior PVT, displaying a significant main effect of sex [F(1, 8) = 13.867,p= 0.006] and subregion [F(1.23, 9.84) = 7.758,p= 0.016]. The percentage of DAPI cells co-labeling with PACAP-38 was also greater in females than in males (17% vs. 11%), displaying a significant main effect of sex [F(1, 8) = 19.866,p= 0.002], but there was no significant effect of subregion [F(2, 16) = 2.465,ns], consistent with prior findings. These results indicate that both PACAP isoforms are more highly expressed in the PVT of female rats and that PACAP-27 and PACAP-38 show similar distributions across the PVT in females and males. Together, these findings suggest that PACAP may underlie some established sex-related differences in motivated and affective behavior.

Symalla, Sophia

Institution: *WI - University of Wisconsin-River Falls*

Discipline: Psychology/Neuroscience

Author/Contributors:
Sophia Symalla *Morgan Robinson* *Kelli Maleska*

Abstract Name: **False Memories: the Fear Factor**

Purpose: How does mood affect susceptibility to false memories? People are less likely to form false memories when sad, ostensibly because sadness encourages memory encoding of item-level information, while neutral moods encourage holistic processing, in favor of the gist (Storbeck, 2013). Though the protective benefit of sadness in avoiding false memories has been demonstrated, we investigate how both sadness and fear–another important negative emotion– affect susceptibility to false memories. This is significant to investigate because when a negative event is experienced, people often remember vivid and specific details of the incident. In these traumatic scenarios, fear is likely the strongest emotion. From our work, we will be able to demonstrate whether fear, like sadness, protects against false memories.ProcedureParticipants view movie clips validated to reliably elicit the desired emotions: neutral, sadness, fear (Gross; Levenson, 1995; Hewig et al., 2005) and rate their mood using the positive and negative affective schedule (PANAS). False memory susceptibility is evaluated with the Deese–Roediger–McDermott (DRM) paradigm in which participants study lists of words that are each related to a critical, unpresented lure, then take memory tests on the words. If a participant misremembers a critical lure as being presented, a false memory has occurred (Roediger; McDermott, 1995). The mean number of falsely recognized critical lures across the three mood conditions will be analyzed using ANOVA. This project has received IRB approval and data collection has begun.Expected Results and ImplicationsIf fear, like sadness, confers a protective benefit against forming false memories as we hypothesize, participants in neutral moods will have significantly more false memories than sad or fearful participants. Of theoretical significance, we will determine if fear, like sadness, encourages detail over gist processing. Of applied significance, this study may add to our understanding of memory formation in traumatic situations.

Szafraniec, Kayla

Institution: *MN - Minnesota State University - Mankato*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Kayla Szafraniec,
Beth Fisher

Abstract Name: **Soil Organic Carbon Inventory in Regenerative versus Conventional Agriculture**

We calculated carbon inventory between contrasting agricultural practices. We selected sampling sites with the same soil type and landscape position to contrast regenerative and conventional agricultural practices. We measured bulk density and soul organic carbon on soil cores up to 79 cm.We analyzed soil organic carbon by dry combustion using an elemental analyzer. We observed that soils under regenerative practices of 5+ years have more carbon inventory. Soils under 5 years of regenerative practices may not have more carbon inventory than conventional soils. Regenerative agricultural practices can increase soil carbon storage but it can take multiple consecutive years of regenerative practices to see an increase in soil organic carbon.

Szeremeta, Philip

Institution: *CO - University of Colorado at Boulder*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Philip Szeremeta Szeremeta,
Sanghamitra Neogi

Abstract Name: **Hot-Spot Management in Microelectronics through Atomic Modeling**

Transistors are the foundation of the modern economy. Increasing the density of transistors on a chip is the continuous goal of chip designers because this increases the processing power of the device. Because the heat generated by chips is increased when more transistors are on the chip, heat management is a critical issue. It is essential to develop a predictive model, especially for high-heat flux regions in a nano transistor, to design and develop highly reliable transistors for modern electronics. The channel regions of the state-of-the-art nanosheet field-effect transistors (FET) are prone to high local heating due to confinement at the nanoscale. The localized nature of heating is particularly challenging to mitigate using conventional cooling approaches. We develop a first-principles model that predicts the temperature map of the channel region of a nanosheet FET. We use atomistic molecular dynamics simulations to model the channel region under applied thermal gradients. The thermal gradients simulate operational conditions, so functionality can be assessed and improved upon. This allows us to simulate the local temperatures and heat flux without needing to fabricate a physical assembly. I build the configurations of atoms in a perfect lattice which are then run through an equilibration process to create a structure that resembles a real-world structure. Finally, a simulated heat gradient is applied to the structure to find the heat flux generated under operational conditions. Furthermore, we aim to adapt the model to model materials for power electronics. Heat dissipation in these devices since poor heat dissipation is the main factor that limits their performance. While saving time and money, our approach predicts the thermal properties of the intrinsic region of transistors. We anticipate this will make chip development easier and be the basis for future models that predict heat in other parts of the chip.

Szretter, Jordyn

Institution: *CT - Eastern Connecticut State University*

Discipline: Economics

Author/Contributors:

Jordyn Szretter *Matthew Kiernan* *Aden Goffe*
Viridiana de Santiago *Jacob Cohen* *Martha Chatman*
Hannah Beazoglou *Ece Pakdil* *Issamar Ayala-Gutierrez*
Maria Lara *John Reed* *Huimin Wang*
Edgar Omar Escutia Chagoya

Abstract Name: **Examining Length of Stay (LOS) and Hospital Readmission of Pneumonia Patients in the U.S between 2010-2014.**

The healthcare industry has generated large amounts of data over the last decades. Digitization and effective combination of that information brings significant benefits such as detecting diseases in early stages, predicting certain developments or outcomes, and identifying patients at risk for health complications. Given these emerging trends, this study has two overarching goals. The macro level goals are: 1) to expose students to healthcare management related issues, 2) to enable students to research the dynamics of healthcare management systems, and 3) to analyze and understand the role of the Big Data concept in decision-making processes in the healthcare industry. The micro level goals are: 1) to analyze the readmission and length of stay (LOS) trends of pneumonia patients between 2010 through 2014 at a national scale using the Nationwide Readmissions Database (NRD) provided by the Healthcare Cost and Utilization Project (HCUP) in the U.S., 2) to examine the impact of LOS on the likelihood of hospital readmission, with an emphasis on discharge disposition and patients underlying conditions, and 3) to illustrate various readmission trends depicted by patients under different payers, medical comorbidity, and discharge disposition. It illustrates various readmission trends depicted by patients under different payers, medical comorbidity, and discharge disposition. The study implemented multiple linear regression model and revealed that LOS significantly impacted the readmission of pneumonia patients. It also showed that readmission and LOS of pneumonia patients varied by age, gender, medical comorbidities, insure type, discharge position, discharge month, socio-economic status, day of admissions, ownership of hospital, severity of condition, hospital bed size, elective/non-elective cases, teaching status of hospitals, and total charges between 2010 and 2014 in NRD.

Szydel, Sierra

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:

Sierra Szydel

Abstract Name: **Student Attitudes Toward Vending Machine Options On UWEC Campus**

The food environment in which college students live can play a significant role in the transition into adulthood. Many students establish habits in college that may follow them for years. The options in Vending Machines (VMs) are frequently Energy-Dense, Nutrient-Poor (EDNP) foods. These EDNP foods are typically high-calorie, high-fat, and high-sugar. Providing students access to vending machines that only offer EDNP snacks is cause for concern, as students will likely carry these snacking habits with them into adulthood.Such snacking habits may place them at risk for chronic diseases such as type two diabetes, hypertension, and dyslipidemia. Those who suffer from obesity may also be at risk for comorbidities such as depression, anxiety, and other psychological disorders.This study aims to uncover the pattern of snack consumption of students at the University of Wisconsin -Eau Claire Campus, and student attitudes toward healthy vending options by utilizing a questionnaire about vending options. The questionnaireassesses the attitudes and trends of VM use, consumption of certain foods from VM, and other opinions towards VM on the UWEC campus.Findings from this study will be used to influence the University to select more nutritious options for vending machines in campus buildings.

Tablada, Paul

Institution: *CA - California State University - Fullerton*

Discipline: Psychology/Neuroscience

Author/Contributors:
Lilibeth Martinez,
Kareem Torres,
Paul Tablada,
Ella Ben-Hagai,
Kaiulani Gonzales

Abstract Name: **Comparing Trajectories Toward Activism Amongst Asian American and Latinx Young Adults**

Following the murder of George Floyd, the Black Lives Matter movement inspired an increased awareness of social injustices and racism in America. In this research, we examine how the anti-racism movement that followed this historical event impacted Latinx and Asian American young adults and their social activism. We conducted in-depth interviews with Asian American (n=12) and Latinx (n=12) emerging adults who identified as activists. Utilizing Interpretive Phenomenological Analysis we examined recurring themes in participants' life stories that explained their involvement in activism. We found that both Asian and Latinx participants were motivated to join political-cultural heritage organizations to bridge and integrate their American and ethnic cultural identities. Prejudice against the Latinx community motivated Latinx participants to become involved in cultural-political organizations in comparison to Asian American involvement in organizations alike, which led to an increased awareness of anti-Asian racism. The rise of the Black Lives Matter movement motivated Asian American activists to advocate against Asian discrimination. In contrast, the Latinx participants were more motivated towards coalitional activism for people of color, specifically Black and Brown. This research illuminates the similarities and differences in trajectories toward activism for Latinx and Asian American young adults.

Taddeo, Amara

Institution: *PA - Allegheny College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Amara Taddeo,
Alice Deckert

Abstract Name: **Glutaraldehyde Substitution Reaction with Surface Tethered Cysteamine**

Glutaraldehyde is commonly used to link proteins to a surface; however, the reaction kinetics and mechanism are not well studied. We have investigated the kinetics of the reaction between solution phase glutaraldehyde and surface bound cysteamine using surface-enhanced Raman spectroscopy (SERS). Pseudo-first order rate constants were found to be slower in the surface than in solution.

Tadepalli, Aniketh

Institution: ***AL - University of Alabama at Birmingham***

Discipline: Psychology/Neuroscience

Author/Contributors:
Aniketh Tadepalli,
Nicholas Boyle,
Erik Roberson

Abstract Name: Individual Granulin Domains Cause Differing Effects on Cathepsin D Activity

Frontotemporal dementia (FTD) is a leading cause of early-onset dementia and is pathologically characterized by degeneration of the frontal and temporal lobes of the brain. While many cases of FTD are sporadic, several genetic causes have been identified as well. One genetic cause of FTD is loss of function mutations that affect a protein called progranulin, a secretory protein that functions primarily within the lysosome. It is composed of 7.5 unique granulin domains into which it is cleaved in the lysosome. Despite these granulins acting as the functional units of progranulin, they have been not been studied extensively with their individual functions remaining unknown.The goal of this project is to determine if any individual granulin is sufficient to recapitulate progranulin's effects on lysosomal or cellular function. Progranulin has been found to influence the activity of neurons in a variety of ways. One well-characterized effect of progranulin overexpression in rat neurons is a decrease in the activity of cathepsin D when measured in lysates. We found that the granulins had differing effects on cathepsin D; some granulins upregulated cathepsin Dactivity while others mirrored progranulin's effects and decreased its activity. Multi-granulin fragments, however, consistently caused a downward trend of cathepsin D activity. In the future, we hope to determine the role of the individual granulins in other progranulin-mediated cellular processes, including resistance to excitotoxicity and modulation of autophagy. Understanding the role of the granulins in neuronal function will broaden our understanding of how progranulin deficiency causes FTD.

Tai, Steven

Institution: ***VA - George Mason University***

Discipline: Computer Science/Information Systems

Author/Contributors:
Steven Tai,
Victoria Gonzales,
Taylor Anderson,
Andreas Züfle

Abstract Name: Estimating The Path of COVID-19 Using Phylogenetic Techniques

Genetic data provide a wealth of information about the evolution of organisms and their unique features. When it comes to viruses, genetic data is crucial for surveillance and vaccine development efforts. The COVID-19 pandemic led to the collection of large amounts of genetic data on the coronavirus. With such data, the evolution of COVID-19 has been documented since the onset using phylogenetic trees. Strains that are sampled and sequenced can be placed as leaf nodes in these trees. These strains contain spatio-temporal data about where and when the strain was discovered. Internal nodes connecting each branch represent a relationship between the sample and its ancestor. Unlike leaf nodes, the location of internal nodes can never be known exactly. The goal of this research is to estimate the locations of internal nodes using ancestral character state reconstruction and find the full evolutionary path of COVID-19. We obtained genetic data through GISAID which is a large database focused on collecting and sequencing samples from viruses related to influenza and COVID-19. Our sample size is over 8 million, containing spatiotemporal data and other metadata. GPS coordinate data were extracted by processing the location names. To estimate internal node locations, we used ACCTRAN, a form of ancestral character state reconstruction algorithm that annotates internal nodes using characters from leaf nodes and the tree paths. The results provide a novel estimation of the locations of internal nodes and the full spatial path of the phylogenetic tree which will shed light into generating accurate phylogenetic trees from limited sample data.

Tam, Nathan

Institution: ***CA - Occidental College***

Discipline: **History**

Author/Contributors:
Nathan Tam

Abstract Name: **Resilience in Chinese America: Tensions of Immigration, Economic Development, and Cultural Change in the Formation of Community**

Younger Chinese Americans are less aware of the spatial and historic relevance of how, why, and by what means their ancestors survived in this country. What is the role and interplay of immigration, economic development, and cultural change as tensions in Chinese American history of place-making and community building? How are spaces of community formed when analyzing Chinatown as a site that is deeply interconnected with the social imagination of a community (Anderson 1987)? How is the construction of a place related to the interpersonal connections that materialize beyond the physical? These questions are highlighted by examining urban Chinese American sites within San Francisco and Los Angeles. This project draws on two case studies to examine how Chinatowns have confronted and resisted a history of violence, discrimination, and development. This historical analysis reveals how Chinese Americans have historically been able to and continue to form community despite xenophobia and exclusion. It also uncovers factors that both encourage and complicate the existence of a continuous unity amongst these Chinese American sites informed by Kay Anderson's interpretation of community as both a site as well as a social imagination.

Tamba, Jr, D-Jeffersen

Institution: ***IL - Northeastern Illinois University***

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
D-Jeffersen Tamba, Jr

Abstract Name: **THE USE OF FOOD PANTRIES AT FOUR YEARS COLLEGES**

Studies have indicated that students attending universities are experiencing food insecurity. However, the participation rate in campus-based food pantries among students is very low at campus-based food pantries because of its physical location and fear of sigma among students. The objective of this mixed method study is to examine the awareness and use of campus-based food pantries to gain a better understanding of the barriers associated with utilizing campus-based food pantries. Current students at Northeastern Illinois University and individuals working as volunteers in the campus-based food pantry during the fall semester of 2022 were surveyed. The results from the study will identify the issues contributing to low participation rate and provide recommendations to help increase participation at university food pantry. Mixed research methods through surveying and interviewing were utilizing, allowing for thorough exploration of students' participation in the food pantry. Surveys were made available to students across campus through flyers with a QR code. The survey collected demographic information about the students including income, ethnicity, and marital status. The survey also asked individuals to indicate their food security status, food pantry knowledge and participation, and identify reasons their level of food pantry use. These results were analyzed using means, standard deviation, and correlation. Findings from this study revealed that many low-income and first-generation college students suffer significant from food insecurity. Due to various challenges and barriers, these students do not participate in food pantry to alleviate their food insecurity. Common reasons for students to not use the food pantry were lack of basic information, fear of being judge by others, and the potential embarrassment of being seen in the food pantry. It is important that the university community help promote the food pantry and awareness to increase participation and decrease food security experiences by college students.

Tambrini, Olivia

Institution: *IN - Valparaiso University*

Discipline: Art/Music History

Author/Contributors:
Olivia Tambrini

Abstract Name: **How Art Interpretation Preserves Memory: The Significance of Historic Responses to A Sunday Afternoon on the Island of La Grande Jatte (1884)**

This paper discusses how art interpretation preserves memory by reflecting upon several different interpretations of A Sunday Afternoon on the Island of La Grande Jatte (1884) by George Seurat. Throughout history, audiences have interpreted La Grande Jatte's message and preserved its significance in their own way. Still, each memory has centered around and brought forth a feeling of harmony. This paper argues that the timeless, compelling nature and legacy of Seurat's masterpiece demonstrates a powerful characteristic of our memories—their ability to simultaneously shift, change, and even contrast while still holding the innate emotion and significance embedded in our remembrances. These memories, as mentioned, are rooted in an unique interpretation of the art work. Art interpretation plays an essential role in the legacy of artworks, but it is commonly seen as a nuanced subject. Nevertheless, the practice of hypothetical intentionalism—combining authorial intention with meaningful, educated interpretations to draw legitimate and lasting conclusions about a work—can simplify our understanding of the purpose and merit of art interpretation. As the practice of hypothetical intentionalism unifies interpreters through common themes, liberates interpreters through creativity, and allows all reasonable interpretations to be heard, everyone is given a seat at the intellectual table—making artwork more compelling, engaging, and influential. The visual, technical, and memorial workings of La Grande Jatte shows its potential as a tool for analysis.

Tamegnon, Marcelle

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Marcelle Tamegnon

Abstract Name: **Sentiment Analysis of Plastic Ban on Social Media**

Plastic waste has destructive environmental and health consequences, and it primarily affects marine life due to the single-use plastic waste seeping into the ocean. Moreover, in 2019 a total of 73 million metric tons of plastic waste was recorded in the U.S. alone, translating to 221 kilograms of plastic waste per inhabitant. Intending to reduce the amount of plastic waste generated in the U.S., many states have enforced the single-use Plastic ban regulations, and as of May 4, 2022, New Jersey has become one of them. Similar to any actions taken by authorities, enforcing those regulations aroused a response from different communities. The purpose of this study is to analyze the reaction of the population affected by the implemented regulations over time. This study based itself on comments gathered from Reddit. Web scraping was conducted tocollect data from Reddit from 2017/01/01 to 2022/06/30 based on a combination of the keywords regarding plastic ban. The results consisted of a dataset of 46,562 comments, then submitted to a series of text preprocessing and cleaning using NLP techniques. Finally, we use the NRC lexicon to analyze and categorize each comment per NRC lexicon emotion standards which include anger, fear, anticipation, trust, surprise, sadness, joy, and disgust. We found a higher frequency of emotions, such as scared, angry, surprised, and happy, regarding the ban on single-use plastic. Rearranging the NRC lexicon emotion ratio into two sentiments: negative and positive, we conclude that more people are negative toward the ban on single plastic use. This study could go further by comparing the emotion ratio between different states. Conducting this study on comments gathered on a monthly basis instead of a span of five years would produce a mor eaccurate result on how the population in the U.S. feel about the plastic ban.

Tan, Jonathan

Institution: *IA - Iowa State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jonathan Tan

Abstract Name: **Developing Economical Snowplow Navigation System for Whiteout Conditions.**

Whiteout conditions during winters in Iowa create hazardous conditions for all drivers, especially snowplow drivers. We set out to assist the Department of Transportation of Iowa in adding modifications to snowplowing trucks to assist drivers in navigating extreme road conditions. To accomplish this, we sought suitable sensors that can operate efficiently under extreme conditions. We plan to run tests this winter to determine which sensor best suits our goal. The sensors we currently plan on using are GPS-IMU, radar, and possibly lidar. Our goal is to collect data from multiple sensors, analyze the data, and finally output an intuitive yet non-distracting GUI to assist the driver. Current tests show that the GPS-IMU sensor can assist the driver the best, as the sensor we picked, the Swift Duro, provided us with GPS data within 1 cm of accuracy. The radar we chose is the Delphi ESR for its high sensitivity and accuracy. We will be conducting tests under whiteout conditions this winter to understand its capabilities for our application. We collected the data using ROS running on a Ubuntu Server and used Python to process the collected data.Currently, the primary computing hardware used is the Nuvo-7002E, which costs north of $1000. My focus is on testing different low-cost hardware to perform the tasks, i.e., collecting, analyzing, and outputting data. I've been using the Raspberry Pi, which costs less than $50, to collect data from sensors, and so far, it appears capable of handling most tasks. One possible issue is that the Pi might be unable to handle CPU power-intensive operations like map generation. Hence this winter's test would be crucial in understanding its full capabilities.

Tan, Peng

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Peng Tan,
Chris Brantner

Abstract Name: **Codes from Fiber Products of Curves**

When we are storing many data across multiple devices, it is possible to lose some data. We explore a way that generates and stores the data effectively and efficiently; in other words, if we lose some data, we can use our other data to recover the lost information. We are using curves with many points over finite fields by using the fiber products of curves and evaluation codes to achieve this goal. To obtain an explicit multi-dimensional recovery structure, we use fiber products of curves with many points. The data we are encoding is that of polynomials of limited degrees, which are encoded using the evaluation at the points on the curve. We compute the minimum distance, length, and dimension of these codes to get a measure on their usefulness and practicality.

Tanaka, Akira

Institution: *WI - University of Wisconsin-Superior*

Discipline: **Economics**

Author/Contributors:
Akira Tanaka

Abstract Name: **Food Insecurity and Sustainability in Wisconsin: Understanding the Influence of Technological Advancements and Labor Mobility**

This work is a development project for my undergraduate research next year. Food insecurity is one of the most serious problems while number of farms and farmworkers are decreasing. I conducted a literature review through Google Scholar and the school library, and data collection through USDA Database and Census Agriculture. From the data collection, I collected the data of the population of farmworkers, food insecurity, and precision agriculture adoption rate in the United States, Wisconsin, and surrounding Midwest states roughly between 1995 to 2020. The result of my research shows that there seems to be a negative relationship between the population of farmworkers and precision agriculture adoption rate. There seems to be no relationships between other combinations of variables. From this result, it would be encouraged to make sure the people, who are supposed to or want to move between industries, are supported through educational and training opportunities through scholarships. Regarding the information I obtained, I have three future visions for the related research. The first vision is to conduct a US county-level analysis of the same variable with more rigorous analysis method. The second vision is to conduct global/macro-level analysis of the same variables with more rigorous analysis method. The last vision is to find out the method of calculating the efficiency provided by precision agriculture, which is highly ambitious and need more education for myself. As I obtain ideas for other variables or other ways to holdresearch, I am going to add those ideas for the future ideas.

Tanvir, A

Institution: *CO - University of Colorado at Boulder*

Discipline: **Physics/Astronomy**

Author/Contributors:
Abulkalam Tanvir

Abstract Name: **Analysis tool for Mapping and characterization of Climate, Chemistry, and Clouds of Exoplanets (including promising Terrestrial planets) using MIRI (Mid-Infrared Instrument) Phase Curve Program of James Webb Space Telescope(JWST).**

In this project we are utilizing data gathered by the JWST(James Webb Space Telescope) to understand the atmosphere of transiting exoplanets. The purpose of this project is creating a framework to analyze atmosphere of exoplanets by using datasets derived from the observations of exoplanets'from recently launched JWST. I will also present findings based on the investigations of the star spots of transiting exoplanets with the ground based telescopes. I will be using simulated data to attain the necessary skills and techniques over the course of an academic year . These techniques are utilizing (AY 2022-23) data from JWST. Data is in the process of being more and more available.MIRI (Mid Infrared Instrument) onboard JWST helps to study very high redshifted entities for example galaxies in the distant universe. MIRI can pierce through dust to study and take images to study chemistry of the planet formation regions and take images of planets' atmosphere including our own Earth. In addition, on a grand scheme of scientific-applications, it is important to study the high redshifted objects, because the signature of metals in the the universe moves to the wavelength of the Infrared which MIRI will be able to study. MIRI is operating over a wavelength range of 5 to 28 microns. JWST has a camera as well as a mid-infrared spectrograph. A spectrograph is an instrument for dispersing radiation (electromagnetic radiation or sound waves) into a spectrum and recording the detected light into a multichannel detector (credit:The International Society of Optics&Photonics). Research project's goal is to showcase scientific findings by proposing process and findings of an open source software framework which will leverage interdisciplinary segments of astrophysics that consist of physics of optics, data analysis, instrumentation (MIRI) onboard JWST, infrared spectrography, planetary atmosphere of a transiting exoplanet, and software development.

Tao, Ezra

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Political Science

Author/Contributors:
Clinton McKenna *Ezra Tao* *Catherine Madden*
Daniela Butkovic

Abstract Name: Political and Social Biases in Reasoning

Our research investigates the phenomenon of people consuming information that confirms their preexisting beliefs, a significant contributor to political polarization and a problem that is widely considered to be a threat to democracy and governance efficiency. We hope this study could make us more aware of the partisan news we consume and how that carries biases in our beliefs. We provide participants with ten tweets from U.S. senators, half of which are liberal and half of which are conservative. Then, we ask them to choose at least four items to read. We compile their responses and assign scores such that negative scores indicate more conservative choices and positive scores indicate more liberal choices. Then, we discovered, as numerous prior studies have shown, that participants select articles shared by those who share the same political affiliation as them (i.e. Dems choosing dems, GOPs choosing GOPs.). After one week, we inquire about the participants' memories of reading these articles. We ask if they remember reading each tweet individually and compare their answers to our own records. Based on a pilot study, we found that participants tend to exaggerate the quantity of articles they have read. We also discovered that whether or not a person recalls reading an article has little association with their political views (i.e. a Democrat will remember reading an article posted by a Republican Senator as much as remembering reading an article posted by a Democratic Senator). Our findings show that people are more willing to consume political knowledge that aligns with their formed political beliefs. However, counter-intuitively, people are nearly equally as good at memorizing political information from both sides. We are working to refine the procedure and collect more data through surveying more participants from Prolific, an online platform.

Taran, Katie

Institution: ***NC - North Carolina State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Katie B. Taran *Kyla B. Bosh* *Jennifer R. Potts*
Katherine R. Saul *Jacqueline H. Cole*

Abstract Name: Gait Impairment in a Rat Model of Brachial Plexus Birth Injury

Brachial plexus birth injury (BPBI), a neuromuscular injury occurring during a difficult birth when the neck is excessively stretched, damages the brachial plexus nerve bundle and leads to shoulder and elbow impairment. Resulting musculoskeletal deformity occurs around the glenohumeral joint, which facilitates functional shoulder range of motion and gait movement. While previous studies assessed specific impairments including gait impairments caused by BPBI, they only examined one time point post-injury. Our objective is to create a timeline over which these impairments develop and their impact on shoulder growth and function. Sprague Dawley rats were divided into 4 surgical groups (postganglionic neurectomy, preganglionic neurectomy, forelimb disarticulation, or sham surgery) and received surgery on one forelimb at postnatal days 3-6, followed by sacrifice at either 3, 4, 8, or 16 weeks after surgery. Videos of walking (5m/min) and running (10m/min) gait were recorded for each group at 3-, 4-, 6-, 8-, 12-, and 16-weeks post-surgery(n=9-60 per timepoint). Metrics including stride length, stride time, stance time, and duty factor were compared across groups with ANOVA (α=0.05) and Tukey posthoc tests. Preliminary results indicate that both neurectomy and disarticulation groups had smaller injured-limb stance times relative to the sham group for both walking and running at 4 weeks. Walking duty factor was lower for the neurectomy groups at 4 weeks relative to sham; disarticulation groups had lower walking and running duty factors at weeks 3 and 4 relative to sham. Additionally, injured limb stance time for walking and running was greater for preganglionic neurectomy than postganglionic neurectomy over time. These results suggest a temporal change in functional shoulder movement across time and better functional limb recovery following preganglionic BPBI. limbs. Understanding when functional shoulder movements are altered following BPBI is critical for developing more targeted and timelier treatment strategies.

Tarver, Szachary

Institution: ***TX - San Jacinto College***

Discipline: History

Author/Contributors:
Szachary Tarver

Abstract Name: Gene Kranz: An Exceptional Leader

Gene Kranz, a NASA flight director from the onset of the space race through the end of the Apollo era, consistently demonstrated his steady perseverance and capable leadership during the entire span of his tenure. As early as high school, Kranz encountered situations that required making difficult decisions. Despite the pressure, Kranz controlled his emotions and carefully considered options before making what he deemed the right choice. As he progressed into his career, Kranz learned to heed others' advice. Because he accepted guidance from multiple mentors during flight training and his early career, he was later able to apply his wisdom in even the most challenging conditions presented by the infant space program. Even when failure seemed inevitable, Kranz refused to accept defeat. Instead of relying on his own knowledge, he listened to every member of his team to reach a solution. Kranz's approach to teamwork and how it accentuated his skills as a leader will be examined in depth. Furthermore, his unalterable perseverance will be highlighted because it is one of the primary features that truly defined him as a leader. Because his steadfast perseverance, strong emphasis on teamwork, and incredibly high standards were prevalent throughout his tenure, Gene Kranz proved to be an exceptional leader.

Tasca, Angelina

Institution: ***OK - University of Central Oklahoma***

Discipline: Architectural and Interior Design

Author/Contributors:
Angelina Tasca

Abstract Name: ?Designing a Safe Sensory Home For a Client Who Has Retinitis Pigmentosa?

Making the home safe for the visually impaired client but still functional and aesthetically pleasing. The client of this specific project is a husband and wife who both work from home. The husband has Retinitis Pigmentosa. Retinitis Pigmentosa is a disease that affects the retina of the eye. As time goes on the person's eye site diminishes more and more until the only site the person has is a pin site. Material selections are very important from colors to slip resistance. Using high contrast between baseboards and walls makes it easier to navigate space. Using textural cues are important too, using carpet for bedrooms and hard flooring in common spaces shows where the client is in home.Giving the client textural cues makes it easier for them to navigate around the house safely. Being able to step into a room and feel the ground is different gives them a quick view of where they are in the home rather than having to seek something familiar. In this home, the design includes light-colored walls with black crown molding, baseboards, doors, door framing, light switches, and electrical plugs. Making sure that the flooring material is slip resistant to avoid accidents, using fixtures that have high contrast compared to the wall they sit on, and lots of light for the user. Throughout the space task lighting is also a key element in the space. Adding under cabinet lighting, lighting next to chairs or desks, and bedside lighting helps when the client needs to perform a task. All these aspects put together create a functional and safe home for all the users involved.

Tay, Elijah

Institution: *NY - SUNY Brockport*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Elijah Tay,
Corey Bright,
Tyler Brosius

Abstract Name: **Efficacy of Student Mobile Health Application: The Case of SUNY Brockport**

The importance of universities to provide mobile applications for students and faculty is becoming a growing trend since business operations, as well as academic activities, are affected using technology. Research published in 2021 says that the number of health-related applications in the Apple and Google Play stores has exceeded 97,000 with approximately 100 new applications being added per month. This indicates the potential for growth in the mobile health application market. For these reasons, it is important that the SUNY Brockport Health Center investigates the importance of designing a mobile application that can benefit students and the Brockport community at large. This study aims to determine the effectiveness of a health center application that students and faculty can use. With the changes in day-to-day life since the COVID-19 era, there has been an increasing need for mobile health applications. Designing a mobile application (MyHazen App) for the Brockport community could potentially provide students easier access to the services that the online portal provides, with a more user-centered design approach and improved capabilities. This study comprises four main phases: (1) Gathering user requirements through an institutional approvement, (2) Designing a high-fidelity prototype using Figma, (3) Developing a student-based mobile health (mHealth) applicationtool using Swift and XCode, and (4) Determining if students will adopt to the MyHazen application by conducting a usability testing for student user feedback through an iterated design approach.

Taylor, Benjamin

Institution: *CA - University of the Pacific*

Discipline: **History**

Author/Contributors:
Benjamin Taylor

Abstract Name: **Enslaved Baptisms: How African Slaves Joined The Christian Faith and Made It Their Own**

American slavery is often understood in terms of understanding the inhumane conditions forced upon African slaves by white settlers and United States citizens, and seldom examines the lives of the slaves themselves. As a result, this conceptualization fails to take into account the unique cultural practices and daily lives of enslaved people. In my paper, Enslaved Baptisms: How African Slaves Joined The Christian Faith and Made It Their Own, I seek to answer both how enslaved men, women, and children eventually joined the Christian body despite the strong opposition from slaveholders, and how these same enslaved people created a unique Christian doctrine that gave them spiritual freedom and purpose. I will also look at how Christianity was used in different capacities for enslaved people and slaveholders, and how the religion was used as a protest religion and a religion of oppression, respectively. Through the use of primary sources such as newspapers, diary entries, memoirs, multiple monographs, as well as countless journal articles this paper will illustrate the connection between Anglican missionary work and the strong Christian faith that developed amongst African American slaves through the mid-seventeenth to mid-nineteenth centuries.

Taylor, Grace

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Courtney Forberg,
Archer Peacock,
Rebecca Romero,
Grace Taylor,
Zach Yelich,
Stephanie Stockwell

Abstract Name: **The Future of Plastic Waste: A Multi-Disciplinary Approach**

Approximately 300 million tons of plastic waste is produced every year worldwide; only ~7-9% is recycled.The result is harmful plastic waste accumulation that negatively impacts ecosystems and communities around the world. Polyethylene terephthalate(PET) is one of the most abundant plastics due to its transparency and chemical strength. While naturally occurring PET-degrading bacterial enzymes have been identified (i.e., PETase and MHETase), their physiological requirements make them ill-suited for industrial use. We attempted to address this problem by bioengineering a chimeric PETase::MHETase protein for enhanced PET degradation. Review of recent literature revealed a collection of PETase and MHETase-optimizing mutations shown to enhance temperature and pH tolerance. Building from this work, our approach was to combine these nucleic acid changes into a single modified open reading frame (ORF) to support even greater PET degradation capabilities. The synthetic plasmid DNA construct was transformed into E. coli and expressed to produce a novel chimeric protein. The biomanufactured product was purified by nickel column chromatography and quality-tested using standard assays. Finally, functional assays allowed us to measure PET plastic degradation. Recognizing that typical practices in life science laboratories are part of the plastic waste problem, our team explored and implemented ways to make our laboratory—and others like it—more sustainable. Additional methodologies from the field of STS (Science, Technology and Society) were used to consider, imagine, and develop greater understanding of the implications of plastic waste and how a bioremediation-based solution might be implemented in the future.

Taylor, Jessica

Institution: *TN - University of Tennessee at Knoxville*

Discipline: Computer Science/Information Systems

Author/Contributors:
Jessica Taylor *Jake Robinette* *Cary Staples*,
Katherine Hirt *Jacqueline Juneau* *Tanner Dunning*

Abstract Name: **The Beloved Community: Creating a collaborative experience to explore Ethical Decision Making and Perspective taking using historical references**

The goal behind creating this experienceis to allow participants to engage with the decisions, actions, and perspectives of the governmental officials, college administrators, and student demonstrators during the 1960s student sit-ins for Civil Rights in Montgomery, Alabama. This project allows participants to see themselves in each of the moral leader comparators lived experiences as told by them, as well as engage with the original documents and newspaper coverage of the events. The events selected for this pilot spawned two landmark legal cases—the Dixon v. Alabama State Board of Education (1961) and the Sullivan v. NY Times (1964). This poster presentation outlines the metamorphosis of historical content into a collaborative, playable experience. Using content that was analyzed by previous teams, our goal was: to create archetypes of the people involved in the actual events; segment events into specific questions; and organize information access to individual players based on character perspective. Students then meet synchronously to debate the “Event Questions” from the perspective of their assigned archetype. At the end of the timed discussion, all participants propose and present to the group, a course of action based on their research and the impact of the discussion. This continues for four rounds. At the end of the experience, suggestions for actions are compared to the historical documentation of the events. Based on the game mechanics used in “The Situation Room Experience,” students move from exploring contemporary events, back in time, where information is received through newspapers, flyers, radio and word of mouth, to better understand the context of decisions that still affect us today.In addition to understanding history, this experience can be used to promote the higher order skill development needed by college students - empathy, perspective taking, intercultural agility, and ethical decision-making.

Taylor, Jessica

Institution: *TX - Lone Star College*

Discipline: **Philosophy/Religious Studies**

Author/Contributors:
Jessica Taylor

Abstract Name: **State-Sponsored Gambling: A Pragmatist Perspective**

Through an application of John Dewey's pragmatist philosophy, this research evaluates the morality and efficacy of using state lottery revenue to help fund K-12 education in the United States. While previous scholars have used rigid utilitarian or Kantian ethics to evaluate lotteries, pragmatism provides a unique, adaptive perspective to the dilemma. Using many of Dewey's essays and his monograph, Ethics (1908), this study first establishes the tenets of his philosophy which apply to the dilemma: the value of individualism, educational reform, and governmental responsibility. Then, an evaluation of state lottery commissions from 1980 – 2020 reveals the most common ethical issues to be regressivity, low efficacy, and a lack of government transparency. To assess these practices, Dewey's model of describing morality via value judgements was applied to each ethical issue. The results suggest that the current system is neither ethical under pragmatism nor effective at what it claims to achieve. This challenges the continuation of the state lottery system as-is with possible solutions including: the utilization of progressive revenue collection, ensuring a higher quality education for all citizens, and privatization of lotteries. In time, these solutions would likely render the current lottery system cyclically self-defeating. Further research could include a comparative analysis of the funding of public education between states, with and without state lotteries, to provide more quantitative evidence demonstrative of state lottery efficacy.

Taylor, Milan

Institution: *NY - Cornell University*

Discipline: **Anthropology/Archeology/Human Geography**

Author/Contributors:
Milan Taylor

Abstract Name: **Queer Mortuary Practices: The Performance of Death and Dying in AIDS Epidemic New York City**

How was the right to be remembered and cared for reflected in the burial practices of queer people during the AIDS epidemic? This paper explores the connection between the material culture of Hart Island, a public burial ground off the coast of the Bronx, and the performance of death and dying during the AIDS epidemic in New York City. Centered on a bioarchaeological approach to the embodiment of inequality, I also draw from performance theory, queer archival theory, the development of ballroom aesthetics and alternative kinship structures, and the body as a form of protest to situate the disaccord between government-directed mortuary practices and community-based care. Since many queer relationships lacked the legal recognition required to claim the remains of a decedent, individuals who died of AIDS-related complications were relegated to unmarked graves. The rebranding of Hart Island as an AIDS-quarantined burial ground is an example of the state's creation of material culture, yet the painted rocks left along the island by bereaved loved ones also contribute to the island's archaeological record. Given that queer people were denied the practice of traditional funerary rites, extravagant performances of death and dying (as a form of protest) developed in response to the aforementioned axis of structural violence. These included die-ins, publicly visible parody-like funerals, and the public spreading of ashes. With the recent rise of queer bioarchaeological and Black feminist archaeological theories, there emerges a new framework for understanding the search for autonomy and continued acts of resistance embodied in these queer mortuary practices.Keywords:AIDS epidemic, mortuary archaeology, 1980s-90s New York City, Hart Island, queer kinship

Taylor, Sheiana

Institution: ***WI - University of Wisconsin-Oshkosh***

Discipline: Biology

Author/Contributors:
Sheiana Taylor *Dana Merriman*

Abstract Name: Prenatal Development of the 13-Lined Ground Squirrel

The 13-lined ground squirrel (Ictidomys tridecemlineatus; 13LGS) has excellent daytime vision based on numerous cone photoreceptors in their retinas; a human-like lens and eye structure; and a markedly larger portion of occipital cortex devoted to visual inputs. Therefore, the 13LGS has been identified by the National Eye Institute as a valuable alternative rodent model for studying treatments of human visual disease. In addition, the 13LGS is an invaluable model for exploring possible translation of its hypometabolic hibernation physiology to various aspects of human medicine, including blood banking, emergency brain and cardiac care, and manned spaceflight. Despite all these advantages of the 13LGS for multiple fields of biomedical research, the species' embryonic and fetal development over ~27 days' gestation remains undescribed. This project tested the hypothesis that the Theiler Staging criteria established for laboratory mice can be applied to the 13LGS. All animal procedures were pre-approved by the UW Oshkosh Institutional Animal Care and Use Committee and were carried out in a USDA- and AAALAC-accredited facility.Multiple pre-implantation embryos (collected 1-4 days post-copulation), 16 fetuses, and 1 neonate were collected from UW Oshkosh Squirrel Colony specimens over several years and preserved. Using a dissecting microscope, their crown-rump measurements and gross anatomical features corresponding to Theiler Stating were documented. The available pre-implantation embryos were found to span TS1-4, whereas the available fetuses spanned TS16-26. The neonatal specimen constituted TS27. The species' characteristic stripe/spot pattern was visible in the skin by embryonic day 21, corresponding to TS24. To capture TS5-15, additional 13LGS specimens must be collected in future breeding seasons, but the images reported here represent about two-thirds of this useful model species' prenatal development. Supported by the UW Oshkosh Squirrel Colony, NIH U24EKY029891-04 and the UW Oshkosh McNair Scholars Program.

Tehrani, Zahra

Institution: ***IN - Purdue University Main Campus***

Discipline: FAN Abstract

Author/Contributors:
Zahra Tehrani

Abstract Name: Evaluation of an Online Citizen Science Game as a Remote Course-based Undergraduate Research Experience (CURE)

The COVID-19 pandemic highlighted a critical need for rapidly connecting students to remote research experiences during times of unexpected constraint when college campuses are closed. To address this gap, a new remote course-based undergraduate research experience (CURE) was developed around the citizen science game Foldit. In recent years, citizen science games have grown in popularity and many of them have reported participants making genuine discoveries for complex research problems. Foldit crowdsources human creativity and spatial reasoning skills to solve computationally challenging problems in de novo protein design. Because it is free, available online, and designed to be accessible to non-scientist audiences, Foldit can be broadly and efficiently adopted across institutions both as a CURE or as an apprenticeship-based traditional undergraduate research experience. The Foldit CURE was designed for novice researchers with no prerequisite courses. The first iteration of the course consisted of 20 students ranging from freshmen- to senior-level with diverse demographics and academic majors. This study aims to address the following research questions: (1) How can the online game Foldit be implemented as a remote or hybrid CURE? (2) What impact does the Foldit CURE have on students' content knowledge and competency in research thinking? (3) What impact does the Foldit CURE have on students' attitudes towards themselves and the STEM field? (4) What were the successes and challenges of this remote CURE from the perspective of the faculty and students? Analysis of learning assessment and course evaluation surveys revealed that students showed gains in content knowledge, competency in research thinking, scientific identity, self-efficacy, and interest in STEM. Altogether, results from this study suggestthat remote CUREs can yield positive student outcomes and can be used to guide the development of future CUREs involving citizen science games.

Tehseen, Anum

Institution: *NY - Siena College*

Discipline: Public Health

Author/Contributors:
Shriya Matta,
Aaminah Afzal,
Anum Tehseen

Abstract Name: **Food As Medicine Program Analysis**

The relationship one has with food is directly correlated with one's health. Our current health system has a severe issue with individuals with chronic illnesses who face issues of affordability and accessibility to food. This has led food pantries across the country to develop food as medicine programs which can consist of medically tailored meals, medically tailored packages, and nutritious food referrals. Ultimately, the goal of these food intervention programs is to help create a better lifestyle and improve the health of individuals with food insecurity and chronic illnesses. This presentation will focus on an analysis of the Food as Medicine program at the Food Pantries for the Capital District. Our hypothesis is that Food as Medicine intervention programs improve the health of individuals with chronic illnesses which is evident through the changes in their A1C levels, BMI, number of hospitalizations, and blood pressure.

Teigen, Madeline

Institution: *GA - Georgia College and State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Madeline Teigen *Wathsala Medawala* *Mia Popkin*

Abstract Name: **Designing An Undergraduate Forensic Chemistry Experiment on the Levels of Amphetamine in Urine Using Two Different Methods.**

Amphetamine is used to stimulate the central nervous system in patients with ADD/ADHD (Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder). This drug benefits those who need it, but according to FHE Health, it is widely abused by 11.1% of all college students.The aim of this procedure was to design a teaching lab on determining amphetamine in urine samples. For the first part of the experiment amphetamine was evaluated in synthetic urine samples through an Enzyme-Linked Immunosorbent Assay (ELISA kit) that commercially available and is widely used in drug labs to qualitatively analyze whether amphetamine is present in a sample. This experiment determined whether the ELISA kit would be able to be used to find accurate quantitative results. The ELISA kit operates based on competition between the drug in the urine sample and the drug enzyme conjugate for antibody binding sites on the 96-well plate. The absorbance values were obtained with a microplate spectrophotometer. Once the values were obtained from the spectrophotometer, the data was analyzed to find the concentration of the drug in an unknown sample. Samples containing between 30.0 ng/mL and 300. ng/mL of amphetamine were analyzed using this method. The percent error for the calculated concentrations was 90.2% for the lowest concentration values, and around 13.9% for the high concentration, showing that the kit is unreliable at lower concentrations. The second part of the experiment involved the use of Gas Chromatography/Mass Spectrometry to compare the two methods and for better quantification of the concentrations of amphetamine that are detectable in methanol. Amphetamine is extracted from urine and then evaluated using the GC/MS. Both of these experiments were designed to be used as lab classes for the forensic concentration program. The experimental procedures and results obtained using the two methods will be discussed in this poster.

Temes, Hannah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Political Science

Author/Contributors:
Hannah Temes,
Joe Taylor

Abstract Name: The Rise of QAnon: From a Chatroom Board to an International Movement

This project will investigate how online indoctrination of the conspiracy theory QAnon has led to the formation of groups and movements in an international context through time. This is important because the belief in the QAnon conspiracy has led to violence, both in the United States and internationally. Such events include the January 6th, 2021 and the “Freedom Convoy” in Canada. Regardless of the origin, the ideas rooted in QAnon conspiracies have grown worldwide; if you have access to a computer, you are able to interact with QAnon content. What is concerning is how QAnon has co-opted legitimate movements to push their narratives, such as with #savethechildren. Moreover, QAnon has given rise and fueled similar conspiracies both in the United States and worldwide. This project will also investigate the differences between American and International ideals of tolerance by comparing international and American free speech law. This will give insight into how different countries react to far-right conspiracy movements. We will be utilizing the Twitter API and the coding language python to create a machine learning model to track the spread of QAnon through time. Once we get key data points, we will cross-reference them with what was in the news at the time. This project is done in the hopes of contributing into the new research of extremism online.

TenBarge, Elizabeth

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Political Science

Author/Contributors:
Elizabeth TenBarge

Abstract Name: Examining and Defending the Constitutionality of Equity, Diversity, and Inclusion Trainings within Higher Education.

Equity, diversity, and inclusion training in higher education has been used to educate students and open them to worldviews that they have not traditionally been exposed to. Although these trainings often bring a positive new perspective for students, they recently have found themselves in opposition to free speech advocates. Historically, students attending public universities have benefitted from the broad speech protections afforded to them under the 1st Amendment. One relevant protection included under the 1st Amendment is the right against compelled speech. The Supreme Court has ruled on this matter in West Virginia State Board of Education v. Barnette (1943) and Wooley v. Maynard (1977). Unfortunately, some universities’ training procedures have overlooked the compelled speech doctrine. Through exploration of 1st Amendment case law and data pulled from the Foundation for Individual Rights and Expression (FIRE) network, an in-depth analysis has determined various patterns and themes that lead diversity trainings to cross over from education to coercion. This research culminates in a comprehensive guide on how to adjust diversity trainings to avoid constitutional conflict, while keeping the goal and efficacy intact. If steps are not taken to remedy possible constitutional violations, this issue has the potential for litigation. If it were to go to court, its ability to meet the strict scrutiny standard would need to be proven, which is demonstrated through this research with case law and scholarly constitutional interpretations. This study provides a significant framework for evaluating the constitutionality of diversitytrainings, which will hopefully be broadly implemented in the future.

Tenney, Morgan

Institution: *PA - Westminster College*

Discipline: **Biology**

Author/Contributors:
Morgan Tenney

Abstract Name: **The Effects of Aspartame Exposure on Survival and Behavioral Profiles of Fathead Minnows**

Since the mid-1900s, artificial sweeteners such as aspartame have become one of the most widespread sugar substitutes in the world. Increased levels of aspartame metabolites (phenylalanine, aspartic acid, and methanol) can lead to impaired metabolic function in the brain leading to pre-mature brain tissue degeneration which can increase the likelihood for developing neurodegenerative diseases. The purpose of this study was to measure behavioral abnormalities and survival of fathead minnows exposed to aspartame. Fathead minnows were exposed to 0 mg/L, 10 mg/L, 100 mg/L, or 1,000 mg/L aspartame for 4 weeks with survival measured daily. Following the exposure period, a novel tank diving test (NTD) and a light/dark preference test (LDP) were used to identify any behavioral abnormalities. ANOVA indicated a significant (0.05) impact on survival at the highest tested concentration. Both behavioral assays showed no significant differences (0.05), indicating no clear effect on behavioral profiles at any level of aspartame exposure. Other published research has shown that aspartame has neurodegenerative properties based on behavioral testing and variations in neurotransmitter homeostasis in the brain in zebrafish. Our results suggest that behavioral effects due to aspartame exposure may be species-specific. Research on other fish species will be necessary to determine the scope of neurodegenerative properties of aspartame on aquatic vertebrates.

Tenorio, Jessica

Institution: *TX - The University of Texas at San Antonio*

Discipline: **Political Science**

Author/Contributors:
Jessica Tenorio,
Bryan Gervais

Abstract Name: **Examining Trends of Online Incivility as Tweeted by US Congress**

Social media continues to engrain itself as a medium for communication in contemporary politics. Social media cuts the middleman out as candidates are now able to speak freely and directly to their constituents as opposed to traditional news sources (Petkevic and Nai, 2022).With politicians now utilizing social networking sites as a form of broadcasting to their public audiences, incivility amongst them festers. Incivility is defined as language that uses an unnecessary disrespectful tone towards the participant (Coe et al., 2014). Incivility online encompasses direct insults, attacks on character, sarcasm, as well as extreme and/or dramatic language. These characteristics were coded for incivility from a sample of two thousand tweets, taken from official US congressional accounts between 2016 and 2020. The following research questions are addressed:
From this dataset, were direct insults and/or character attacks used more commonly than any other form of incivility.
What direct insults and/or character attacks such as, liar, shame, failure, corrupt, dumb, and idiot were commonly used towards others?
These research questions provide the opportunity to further understand trends of incivility.

Tepsa, Jacob

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Education

Author/Contributors:
Jacob Tepsa

Abstract Name: **Analysis of Environmental Education in Higher Education Programs: Opportunities for Professional Development**

Higher education programs across the continent address environmental education (EE), but how these programs incorporate EE is highly dependent on what resources they rely on. While some educators align their coursework with themes from the North American Association for Enviornmental Education (NAAEE) Guidelines for the Professional Development of Environmental Educators, there is an existing need for support to improve environmental education integration. Our research compiled responses from surveys and interviews of higher education members. The survey assessed the integration of EE in higher education programs, exploring topics, strategies, priorities, and networks. A database of faculty members who've integrated EE into their classes were contacted to take the survey. This study explored which strategies faculty members are currently using to teach their students such as inquiry-based learning activities, inclusivity approaches, modeling environmental education activities, and teaching outdoors. This includes some of the supports they draw on to do so and the overall design of university programs themselves. Survey results were then compiled and reviewed for descriptive analysis which included coding for themes. Survey respondents ranked sharing, standardizing, and improving EE professional development as a top benefit for statewide networks of higher education professionals. Respondents also indicated example assignments and opportunities to talk with other professors would help improve the delivery of EE in their contexts. Active statewide networks create opportunities for faculty to share resources such as syllabi, curriculum ideas, and to provide connecting points with other EE supporters. This study provides insights for the creation of these networks and creating professional development experiences for faculty members.

Teska, Christy

Institution: *MT - Montana State University - Bozeman*

Discipline: Biology

Author/Contributors:
Christy Teska

Abstract Name: **Bacterial Surfactant Production using Hydrocarbons as Nutrient Source**

Biosurfactants are secreted by bacteria and consist of a polar head and nonpolar tail. Current knowledge of biosurfactants stems from model bacterial isolates in laboratory settings, whereas knowledge is lacking in the understanding of environmental isolates' biosurfactant production. A multidisciplinary project explores the role of biosurfactants in the life cycle of Psychrobacter sp. PL19, a bacterium isolated from a brackish Antarctic Pond. Data presented herein focus on the role of biosurfactants in the bioavailability and biodegradation of hydrocarbons using respirometry. Three questions are being addressed: (i) Can Psychrobacter sp. PL19 grow on hydrocarbons? (ii) Does stimulating biosurfactant production enhance the growth of Psychrobacter sp. PL19 on hydrocarbons? (iii) Do biosurfactants released by Psychrobacter sp. PL19 promote the growth on hydrocarbons of non-biosurfactant producing bacterial strains? Psychrobacter sp. PL19 was able to grow on either hexadecane, naphthalene, or benzene at 4°C. CO2 production rates were similar for all three substrates and ranged between 0.18-0.20 fg CO2 cell−1 day-1 on average. Fundamental understanding of the role of biosurfactants in the environment can lead to improved bioremediation strategies in cold temperature environments.

Tewari, Vedant

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Xuefeng Bao

Abstract Name: **Fascicle and Aponeurosis Detection from Ultrasound Images**

The amount of torque produced by a human muscle is found to be highly correlated to the angle between fascicles and aponeurosis. Ultrasound technique can be used to capture an image stream of the muscle fibers from a human subject during functional actions and can be useful in non-invasively measuring skeletal muscle architecture, which contains human intent information. The manual process that has been used in the past to deduce the anatomical characteristics of muscles from US pictures is arduous, time-consuming, and subject to variation between researchers. In this research project, we intially invited a human expert to label the two target muscle fibers as our reference, i.e., the ground truth, then we proposed to develop an efficient machine learning-based detection method utilizing Microsoft CUDA, Azure and Python OpenCV library enabling parallel computing that can mimic a well-trained human expert in identifying fascicle and aponeurosis, and hence therefore, computed the pennation angle (PA) with decreased time complexity and to an acceptable accuracy. The architecture assumes muscle fibers have tubular/linear characteristics; thus, we may hypothesize that the Hough transform can enhance the feature. It should also be robust for low-frequency image streams. We contrasted the suggested algorithm with two established benchmark methods: Alex and Vgg. The performance of the proposed approach showed higher accuracy in our dataset, with readings similar to thehuman expert. The calculation of human muscle torque performed using the proposed method shows promising potential in automatic muscle fascicle orientation detection to facilitate implementations in biomechanics modeling, rehabilitation robot design, human robotics, degenerative muscle disease tracking, physical therapy, and neuromuscular disease diagnosis with low-frequency data stream. Additionally, we also observed that thedecrease in program run time might have thepotential for real-time computing for these applications in clinical settings.

Thackery, Mackenzie

Institution: *IA - Iowa State University*

Discipline: **Biology**

Author/Contributors:
Mckenzie Sanden,
Mackenzie Thackery,
Makayla Dove,
Qian Wang

Abstract Name: **Genetic Contributions of APOE & TOMM40 to Mitochondrial Morphology & Alzheimer's Disease**

The strongest genetic risk factor of late on-set Alzheimer's disease, LOAD, is the apolipoprotein allele APOE ε4. APOE is an apolipoprotein that transports cholesterol and amyloid-beta proteins between cells and across the blood-brain barrier. Previous research suggested APOE ε4's relation to LOAD is tied to inefficient cholesterol; lipid transportation. Thus causing amyloid-beta protein accumulation and plaque formation in the brain. New research suggests that APOE ε4 affects other cellular functions, such as cellular glucose metabolism. TOMM40 rs2075650, a translocase of the outer mitochondrial membrane, is another single nucleotide polymorphism tied to Alzheimer's disease. Interestingly, genes APOE and TOMM40 are in proximity on chromosome 19 and share linkage disequilibrium. In order to study their effects on cellular level, HEK293 cell lines carrying combinations of these alleles will be created using Piggy-bac homology-directed repair method facilitated by CRISPR Cas9 technique. The Piggy-bac plasmid vector contains GFP, Puromycin resistance and hsvTK genes for cell selection. Once the cells are verified through sequencing, we will evaluate the effect of APOE ε4 on the distribution and transportation of cholesterol inside and outside HEK293 cells, glucose metabolism through mitochondria, and also to study its interaction with TOMM40 rs2075650.

Thai, Vivian

Institution: *TX - Southern Methodist University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Vivian Thai

Abstract Name: **CRY-based Optogenetic Tools for Drug Discovery**

The circadian clock is composed of input signals, an oscillator, and output functions that regulate circadian rhythms. Within the mammalian circadian clock, the suprachiasmatic nucleus is driven by transcription translation feedback loops (TTFL), which has activator proteins, CLOCK and BMAL1, and repressor proteins, period (PER) and cryptochrome (CRY). Disturbed clock proteins can cause sleep disorders, immune disorders, and mood disorders. To study CRY's role in the mammalian circadian system, we developed an optogenetic tool to examine interactions between CRY and nuclear receptors (NRs).We used a mammalian two-hybrid assay to examine the interactions between mouse cryptochrome (mCRY1 and mCRY2) and NRs: androgen receptor (AR), glucocorticoid receptor (GR), and pregnane receptor (PXR). If CRY interacts with the NRs, luciferase is transcribed and the cells glow in the plate reader. Since our optogenetic tool showed high luciferase expression when mCRY1/mCRY2 interacted with NRs and this interaction has already been confirmed, our optogenetic tool proves to be an accurate indicator for interaction between clock components and receptors.With a successful optogenetic tool, we have a high throughput assay to test interactions between other clock components, NRs, and small-molecule modulators in transfected mammalian cells. Small-molecule modulators adjust the circadian clock's period by targeting input pathways or specific pockets on clock proteins. KL001 is one small molecule that has been identified to affect both mCRY1 and mCRY2's binding ability with other proteins. Other small molecules work as selective drugs, binding only to mCRY1 or mCRY2, or have therapeutic properties for diabetes (GR), testosterone/androgenic hormone disorders (AR), and steroid hormone receptor PXR.Ultimately, our optogenetic tool allows us to investigate CRY's role in the regulation of mammalian development and metabolism. Understanding the effects of drugs on the interaction between the cryptochromes and the receptors will help in developing drugs to regulate these hormonal processes.

Thangi, Lal

Institution: *IA - Iowa State University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Lal Thangi,
Marson Putra,
Thimmasettappa Thippeswamy

Abstract Name: **INOS inhibitor, or 1400W, mitigates pathological morphology of microglia in nerve agent (soman)-induced rat model of epilepsy**

Epileptic seizures are known to induce neuroinflammation milieu in the brain involving the activation of resident immune cells and microglia. Microglia undergo aberrant morphological changes following brain insults, producing an excessive amount of induced nitric oxide synthase (iNOS). Therefore, in this study, we investigated the effects of the iNOS inhibitor, 1400W, on abnormal microglial morphology in a nerve agent (soman)-induced rat model of epilepsy. Morphometric analysis was performed to assess the number of branches, their lengths, endpoints, and cell body area for individual microglial cells. In the soman-treated group (epileptic), the vast majority of microglia showed a reduced number of branches, endpoints, shorter branches, and larger cell bodies as opposed to numerous, lengthy branches/endpoints and relatively small cell bodies in the control group. In contrast, in 1400W- treated soman exposed animals, these aberrant phenotypes of microglia were restored in which microglia show a greater number of branches, endpoints, longer branches, and smaller cell bodies relative to the soman vehicle treated group. Overall, these findings highlight the important roles of iNOS in mediating microglia-driven neuroinflammation, and its inhibition is neuroprotective against epilepsy-induced neuroinflammation. Therefore, strategies intervening with iNOS inhibitors could mitigate seizures and their associated pathologies in epilepsy.

Thao, Javit

Institution: ***WI - University of Wisconsin-Oshkosh***

Discipline: Biology

Author/Contributors:
Javit Thao,
Kaddy Janneh,
Kirandeep Kaur,
Isaac Kamara,
John Chan

Abstract Name: Updated Annotation of Platyhelminth G-Protein Coupled Receptors

Parasitic schistosome flatworms (Schistosoma haematobium, Schistosoma mansoni, and the zoonotic parasite Schistosoma japonicum) are responsible for the disease schistosomiasis which affects >200 million people. There is a need to identify new druggable targets in these parasites, given that there is no human vaccine and the current reliance on praziquantel monotherapy raises the potential for the emergence of drug-resistance. G-protein coupled receptors (GPCRs) are a logical starting point, since they control important aspects of schistosome biology such as neuromuscular function and reproduction. These targets are also highly druggable; over 1/3rd of FDA approved therapeutics act through these receptors. Updated genomes for several important species of flatworms have recently become available, providing significant improvements over previous drafts. There are likely additional GPCRs in these improved genomes that were not annotated in previous versions. Here, we have bioinformatically predicted the GPCRs present in these updated flatworm genomes using tools such as HMMER3 and BLAST, and used tree-building approaches to classify these additional receptors. These new annotations will assist drug discovery efforts by expanding our knowledge of parasite druggable targets, as well as enable improved analysis of omics datasets to better understand the mechanisms of existing therapeutics.

Theis, Sarah

Institution: ***MI - Hope College***

Discipline: Communication/Journalism

Author/Contributors:
Sarah Theis

Abstract Name: Impact of Communication Channel on Voter Behavior: An Exploration of the Intersection of Political Communication and Campaign Theory

A founding principle of American democracy is the right to vote. Inevitably, the communication styles of politicians and their teams have changed over time. While early voters relied heavily on word-of-mouth and newspaper circulation to raise awareness of candidate platforms and turn out voters, today's voters are inundated every campaign cycle by candidate advertisements. These advertisements can be in the form of yard signs, but have also crept into online streaming services like Hulu and YouTube TV, and music platforms like Spotify. In the last 10 years social media, smart phones, and the ubiquity of data have allowed for more targeted and precise campaign communication as campaigns seek to target core demographics to increase voter turnout. Currently, political communication comes in the form of billboards, celebrity endorsements, rallies with politicians, text messages, media advertisements, direct mailers, emails, phone calls, and door-to- door canvassing. This study examines five of these political communication channels (endorsements, billboards/signs, texts, TV advertisements, and rallies; Green;amp; Gerber, 2015), and the impact of these communication channels on voter intention. Using a quasi-experimental design (n = 182), we identified association(s) between political communication channels and intention to vote amongst participants aged 18-22 at a small, midwestern Liberal Arts college. This study provides an important addition to the literature by examining if social media channels (advertisements, online advertisements, etc.) which have exploded in popularity over the past ten years, impact actual intention to vote amongst GenZers.

Thepsimuang, Connor

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Katherine Potocko,
Connor Thepsimuang,
Josiah Walker

Abstract Name: **Investigation of the Effect of Nozzle Temperature on Tensile Strength of Reinforced and Nonreinforced Polypropylene in Fused Filament Fabrication Process**

Fused filament fabrication (FFF), a popular 3D printing method, is increasingly being used to create parts for service rather than simply for form prototypes. A primary advantage of FFF is the short lead time from design to realization of a part; this allows third-party users to quickly make parts for repairs. Commercially available filaments are made of a range of materials, including unreinforced or “neat” polypropylene, bead-reinforced polypropylene, and fiber-reinforced polypropylene. While manufacturers of filament rolls typically provide preferred printer settings (including nozzle temperature) it is valuable to understand the effect of nozzle temperature variation on part strength as well as the tradeoffs incurred with the usage of different polypropylene variants. Furthermore, the most readily available strength data refers to material that has not undergone the FFF process. Having specific information on the tensile strength of polypropylene variants subject to a range of manufacturing conditions will provide valuable design information for those who intend to create service parts from polypropylene via the FFF process.

Thiede, Kaito

Institution: *WI - University of Wisconsin-Stout*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kennadi Shumaker,
Kaito Thiede,
Ana M.Q. Vande Linde, Ph.D.

Abstract Name: **Changes in Chemical Oxygen Demand of Surface Waters in Dunn County**

Chemical oxygen demand (COD) is an indicator of the amount of oxygen required to oxidize organic and inorganic substances in water. COD testing is commonly done on samples of water contaminated with domestic and industrial waste. Discharge of wastewater by industries introduces organic materials that deplete dissolved oxygen available for aquatic life. In Dunn County, this wastewater disposal coupled with runoff from farms and residential areas can negatively impact aquatic ecosystems. COD analysis is an efficient way to determine the aquatic health of water sources, where increasing levels indicate an increase in substances susceptible to oxidation.To assess the susceptibility to oxidation, water samples were collected following a general timeline of herbicide, pesticide, and fertilizer application in the area. Samples were collected from three locations in Lake Menomin, two locations in Tainter Lake, and two locations in Red Cedar River.One set of samples was collected mid-July, a second set was collected at the end of September. COD analyses were conducted using the Open Reflux Method; samples were refluxed in a strongly acidified solution with excess standard K2Cr2O7 to oxidize any organic and inorganic components present, followed by titration with standard ferrous ammonium sulfate with ferroin indicator to determine the unreacted dichromate.Results of the analysis showed decrease in COD (ppm O2) of samples from one location in Tainter Lake (107.60±50.06 to 36.20±11.26), and two locations in Lake Menomin (97.53±44.01 to 41.80±8.09 and 249.27±31.40 to 83.80±6.94). An increase in COD was detected in an area by the Red Cedar River (20.73±9.45 to 36.07±4.69). These findings may indicate that pesticides, herbicides, and fertilizers from farm run-off, discharges from boats, and algae growth affect the COD levels in these surface water.

Thieding, Jenna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Frances Hawes,
Christopher Jones

Abstract Name: **Domestic Intercultural Experiential Learning: A Case Study Working with the Afghan Refugee Population**

Abstract: This case study examines the reflections and civic engagement of twenty-five students in a domestic immersion program with Afghan refugees, identifies if students thought or felt differently about civic participation, and connect the circumstances that caused change to occur. Student reflection and changes in civic engagement were measured by recording responses to questions before, during, and after the immersion. Pre-immersion responses centered about a desire to learn about the Afghan refugee population, and during the immersion focused on an increased global awareness and personal social responsibility specific toglobal citizenship. Post-immersion themes included increased civic engagement and the aptitude to apply knowledge and skills, including career planning, volunteering, and educating others. Results of this study suggest a strong connection to civic engagement and global awareness, as well as the reevaluation of social hierarchies and broadening of perspectives. Keywords:community engagement, Global responsibility, Action learning.

Thiry, Harrison

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Business**

Author/Contributors:
Harrison Thiry,
DeNae Bube,
Riley Kangas

Abstract Name: **Neurodiversity, Personality, and Mental Health Challenges**

Prominent variations of neurodiversity include autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), and dyslexia. Institutions of higher education should foster an inclusive environment for these individuals, which includes understanding common behavioral attributes, limitations, predictors, prevalence, and desirable adaptations. Participants in our pilot study were 23 females and 8 males (31 total), drawn from convenience and student sources. The primary goal in this first foray into investigation of neurodiversity in higher education was to focus on personality and related associations with common attributes of these three forms of neurodiversity. Follow-up with larger samples is planned to investigate their prevalence and effects / limitations in the college environment. Results found that openness to experience correlated negatively with typical ASD symptoms such as difficulty with social norms (r = -.52, .01). Neuroticism correlated positively with ASD symptoms (r = .46, .05), and individuals higher on neuroticism were more likely to suffer burnout (r = .74, .00001). Participants endorsing ADHD symptoms also reported higher burnout (r = .50, .01), and participants not reporting ADHD symptoms reported higher levels of self-care activities (r = -.46, .01).Although this pilot study focused on associations and not causality, our results nonetheless identify several correlates of neurodiverse symptoms and provide direction for follow-up research. The potential benefits of enhanced understanding of neurodiversity in higher education include targeted resources, classroom adaptations, and counseling resources. In short, continued research offers great potential to afford neurodiverse students the same opportunity to succeed as neuro-normal students.

Thomas, Ann

Institution: *MD - Salisbury University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Seth Friese *Joshua Sokoloski* *Anthony Rojas,*
Zobia Rani *Ann Thomas* *Gabrielle Guy*
Wren Adkins

Abstract Name: **Finding Better Solutions for Available MRI Contrast Agents - Fe(II) Complexes Exhibitng Temperature Dependent Spin Transition**

Studies have shown that existing contrast agents containing Gd that are used in Magnetic Resonance Imaging (MRI) are neuro- and nephrotoxic and can accumulate in the brain for many patients, especially those with renal complications. Our goal is to find a replacement for Gd contrast agents by designing an agent based on Fe(II) complexes that is dynamic, activatable, and targeted for thermal tumor ablation therapies. A key property of Fe(II) complexes is that they can undergo thermally induced spin-state crossover (SCO). However, finding an appropriate temperature range in which a SCO would occur for these therapies is critical for future applications.The behavior of numerous SCO complexes, particularly octahedral Fe(II) complexes, has been well described. Key to meeting the goals of this project is identification or chemical manipulation of currently known structures that undergo temperature-induced SCO without degradation at temperatures between 60 – 80 °C. Prior SCO complexes have been found to undergo spin transitions at much lower temperatures due to difficulties in stabilizing low spin states at room temperature. In the case of terpyridal Fe(II) complexes, the high stabilization of the low spin states results in SCO temperatures that are too high.Thus, to find iron complexes that meet the temperature SCO requirements for a contrast agent, we have synthesized a new type of tridentate ligand that contains a bipyridal unit along with a pyrazole, triazole, or an imidazole group. We will use these new ligands to explore their structural characteristics and feasibility towards MRI contrast agents and biological applications. The synthesis and characterization of all Fe(II) compounds, along with their magnetic susceptibility at various temperatures to determine their potential effectiveness as contrast agents, will be presented.

Thomas, Henry

Institution: *IA - Iowa State University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Henry Thomas,
Wenyu Huang

Abstract Name: **Synthesis and Characterization of Novel Boron Oxide Materials**

Boron-based compounds are a subject of interest for materials chemists, especially when it comes to nanomaterials and catalysts. A major selling point of these materials are their high stability and activity as catalysts. A particular material of interest is tetrahydroxydiboron, which has some unique characteristics when subjected to heat treatment. There is very little literature on the results of this heat treatment, other than the understanding that a distinctive B2O2 phase is formed via dehydration. An optimal synthesis method was developed using multiple Design of Experiments (DoE) programs. The mechanism for the synthesis was upheld via TGA analysis. Thisphase, after characterization via powder XRD, XPS, TEM, and solid-state NMR, was concluded to have a distinct structure from other common boron oxide compounds. While mostly amorphous, there is still a distinct crystal structure forming during the synthesis process, leaving room for further crystallinity improvement and determination of crystal structure.

Thomas, Jonathan

Institution: ***TX - Southern Methodist University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jonathan Thomas

Abstract Name: Compressed Earth Block Production and Characterization

Compressed Earth Blocks (CEB) are an alternate building material made of soil, sand, water, and cement. Compared to traditional masonry units, these CEB are cost effective, sustainable, and can be made on site. The big distinction between traditial masonry units and CEB stems from the fact that CEB is unfired. The performance of the CEB is heavily dependent on the soil type and mix design (ratio of soil to water to cement). The use for these bricks can be seen in the NAE Grand Challenge of restoring and improving urban infrastructure. However, in order for CEB to be used in construction, engineers must have a better understanding of how the mix design will affect the final material performance in order to make sure that projects are up to code. This poster presents the research done to evaluate how mix design affects the final compressive strength of CEB, as well as looking at how consistent the compressive strength values are. CEB was tested at both 7 day and 28 days to see how the final compressive strength varies at partial and full strength. In addition, the poster seeks to show future use of this block in developing countries, through the use of a program that would allow workers to do field tests on soil and input it so that they could determine what the soil type they were working with was, and how that would affect their final mix design and block performance.

Thomas, Makenzi

Institution: ***GA - Georgia Southern University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Makenzi Thomas

Abstract Name: Determining if the M1 and M2 muscarinic acetylcholine receptors underlie the neuroprotective ERK 1/2 cascade in the telencephalon of zebrafish

Zebrafish have gained popularity as a model organism for the study of neurodegenerative diseases. However, shortcomings exist in current knowledge regarding the function of muscarinic acetylcholine receptors (mAChRs), a class of G-protein-coupled receptor, in zebrafish brain. Five types of mAChRs (M1 – M5) exist in the brains of mammals and zebrafish that contribute to cognitive processes. Extracellular signal-regulated kinase (ERK) is a protein required for learning and memory, and ERK activity is stimulated by phosphorylation downstream of mAChR activation. ERK dysfunction provides a potential link between mAChRs and disease pathogenesis. Previously, we've shown that stimulation of mAChRs using the non-specific mAChR agonist oxo-m induces ERK phosphorylation in the zebrafish brain. The objective of the current study is to investigate the roles of the M1 and M2 mAChRS in ERK phosphorylation in the telencephalon, a structure required for learning and memory, in zebrafish. To this end, a combination of mAChR subtype-specific compounds targeting the M1 and M2 mAChRs will be used. Zebrafish brains will be extracted before treatment ex-vivo in oxygenated artificial cerebrospinal fluid (acsf) containing the agonist oxo-m and pirenzepine, an M1 selective inhibitor, methoctramine, an M2 selective inhibitor, or benzyl quinolone carboxylic acid(BQCA), an M1 potentiator. Following treatment, Western blots will be performed to determine the amount of phospho-ERK present in the telencephalon. The findings from this study will contribute to understanding M1 and M2 mAChR function in zebrafish.

Thomas, Mekenna

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: Minority Status and Mental Health

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Thomas, Olivia

Institution: ***MI - Hope College***

Discipline: Biology

Author/Contributors:
Olivia Thomas *Hayla Johnson* *Jennifer Blake-Mahmud*

Abstract Name: Is The Damsel in Distress: Physiological differences between sexes in a sexually plastic species

In animals, most organisms have separate sexes and some species have sexes combined in one individual. Sex is different in plants, where most individuals are both male and female and only some species have separate sexes, known as dioecy. Separate sexes in dioecious plants allows individuals to specialize to better carry out their reproductive roles. This is because plants must make trade offs when spending energy between reproduction and other life history traits such as growth and defense. Often, females allocate more resources to reproduction compared to males which can result in lower vegetative growth rates. However, females often exhibit higher photosynthetic rates to offset their costs of reproduction. A better understanding of the sex-based differences in physiology, due to specialization, is necessary to better understand tradeoffs in life history theory. We investigated how the cost of reproduction varies by sex in Striped Maple trees by measuring photosynthetic rate, branch extension, and fluorescence(a measure of stress) on known females, males, bisexuals, and nonreproductive trees in the spring and summer. We found that sex is a significant predictor of branch extension, with females growing less in a year compared to males and nonreproductive trees. Both females and bisexual trees showed significantly lower rates of photosynthesis compared to males and nonreproductive trees, with all trees having lower rates of photosynthesis in the summer. Bisexual trees showed no significant difference compared to any other sex, suggesting that bisexual trees are not more male or female-like. Interestingly, tree stress, as visible in fluorescence, was affected only by season, not sex expression. Finally, a lower growth rates for females indicates a sex-specific cost of reproduction which may be associated with lower rates of photosynthesis in female-flowering trees. Because of the changing climate, these findings are especially relevant in understanding and managing ecological communities.

Thomas, Ostonya

Institution: *SC - Benedict College*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Ostonya Thomas,
Erica Rutter,
Suzanne Sindi

Abstract Name: **Using Machine Learning Models to Predict the Prices of Vehicles**

In more recent times, eCommerce has become increasingly common in several economic sectors including the automotive industry. In fact, the Union Bank of Switzerland has estimated that 50% of vehicle sales will be completed online by 2030. With the world becoming increasingly digitized, there is a need to improve the ease with which one can legitimately sell a car online. In this work, machine learning models were designed to predict the selling prices of cars based on their images. The dataset used for this project contained approximately 64,500 images of cars with their make, model, year, manufacturer suggested retail price (MSRP), front wheel size, horsepower, displacement, engine type, width, height, length, gas mileage, drivetrain, passenger capacity, number of passenger doors, and body style. The subset of data used for this work contained 500 random images from the abovementioned dataset. For this work two convolutional neural networks were used, one for cleaning the data and another for predicting the prices of the vehicles. The clean subset of data contained 242 images. The data was split into training, validation and testing sets which contained 70%, 10% and 20% of the data respectively. The algorithms produced have the potential to be used by websites that sell cars to inform individuals or businesses that are selling cars how much a vehicle would sell for by analyzing a provided image.

Thome-Hough, Ali

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Biology**

Author/Contributors:
Ali Thome-Hough *Emma Etten* *Michelle DeBoer*

Abstract Name: **A comparison of high- and low-powered pulsed electromagnetic field therapy (PEMF) equipment on mechanical nociceptive thresholds and behavior in horses**

Evaluating components of stress or discomfort is an important step when working with new modalities of therapy equipment involving animals, in this instance horses. This ongoing study will be using behavioral and factors involving mechanical nociception to evaluate and compare both pulsed Electromagnetic Fields Therapy (PEMF) and Bio-Electro-Magnetic Energy Regulation (BEMER) therapeutic modalities. Eight horses over a period of eight weeks will be used in the University of Wisconsin River Falls equine herd that have never been exposed to either stimulus before. Intensity of stimulus will be dependent on each horse's individual needs. Prior to the initiation of treatments, a baseline mechanical nociceptive threshold (MNT) will be taken along 8 locations of the dorsal aspect of the thoracolumbar region. Pressure will be applied using an algometer until an avoidance response is observed, this could include moving away from the applied pressure, skin twitching, or localized muscle fasciculations. Horses will be randomly assigned to a treatment order. Magna wave will be applied every other day for 30-minute sessions on the front, middle, and hind region of the horse for 10-minutes in each section. BEMER will be applied twice daily for 3 consecutive days. On the first day the application will last 5-minutes for both sessions, the second day both applications will last 10-minutes, and on the final day applications will last for 15-minutes. During each treatment session, behaviors will be documented including licking and chewing, sighing, yawning, lowering of the head, decrease in locomotion, and a decrease in pawing. Following the last treatment session a post MNT will be taken using the procedure described above. After data has been collected for the first 4 weeks, horses will be switched to the opposite treatment. All data will be analyzed via a crossover study where statistics will be run at 0.05.

Thompson, Cassandra

Institution: *SD - University of South Dakota*

Discipline: Psychology/Neuroscience

Author/Contributors:
Cassandra Thompson *Avery Franzen* *Brian Burrell*

Abstract Name: **Conditioned Place Avoidance and the Potential Effects of Endocannabinoids in Hirudo verbana, the Medicinal Leech**

Chronic pain is a significant problem worldwide, yet efficacious treatments remain frustratingly out of reach. Both a sensory and emotional component to the pain experience exist, which complicates successful treatment. Comparative behavior and physiology studies may provide important insight into conserved aspects of pain and nociception. While there have been considerable studies on the sensory component of nociception in invertebrates, little research has been done into potential aspects of motivational or affective responses to noxious stimuli. Here, the medicinal leech, Hirudo verbana, serves as a model to examine motivational behaviors in the presence of noxious stimuli or potentially pain-relieving endocannabinoids. Two sets of experiments were designed, conditioned place aversion (CPA) and conditioned place preference (CPP). In the CPA experiments, animals were exposed to a noxious 0.5% acetic acid solution in one of two substrates, the plastic surface of the dish (smooth) or the dish lined with small gravel (gravel). When acetic acid was paired with a gravel substrate, an aversion to gravel was observed at 24hrs and 96hrs after training, while this change was not seen in controls. In the CPP experiments, animals were injured and anandamide, (AEA), an endocannabinoid and potential pain-reliever, was paired, with one of two substrates. When paired with a smooth substrate, unexpectedly, an aversion to the smooth substrate was observed, suggesting that AEA actually enhanced nociception. These results suggest some aspects of affective responses to pain are present in Hirudo verbana and beg further exploration of the pro- and anti-nociceptive effects of endocannabinoids. Further experiments are underway to assess changes in locomotion under the effect of endocannabinoids, as well as conditioned place avoidance and operant conditioning experiments using mechanical, rather than chemical, noxious stimuli.

Thompson, Joseph

Institution: *NC - University of North Carolina at Charlotte*

Discipline: World Languages

Author/Contributors:
Joseph Thompson

Abstract Name: **Broken Social structures: the carcinogens of Andre Giroux's le gouffre a toujours soif**

In the face of an industrializing and urbanizing province, Québec's provincial government under premier Maurice Duplessis (1936-39 and 1944-59) turned towards the past. To maintain their statuses, the government and the Catholic Church embraced an ideology of clerico-nationalism, which presented a nostalgic and romanticized portrait of Québécois life, one that was rural, pious, and insulated from anglophone influence. However, the urban Québécois had very different lives, often struggling to support themselves by working for the economically dominant anglophone elite, who conspired with Duplessis to crush francophone unions. Beginning in 1940, a wave of authors responded to the Duplessis administration by transforming Québec's literary landscape from idyllic countrysides to harsh urban realities facing Québécois. As Jane Moss has demonstrated, novels of this eraso frequently featured gravely ill characters that literary historians refer to these novels as "morbid literature,"in which being ill and being Québécois were synonymous. Despite the numerous texts associated with the movement these works have received little critical attention, with some works being almost entirely overlooked. Such is the case for Andre Giroux's Le Gouffre a toujours soif. My paper will examine how illness in Giroux's novel served as a metaphor for the social ills harming urban francophones, notably those associated with clerico-nationalism and the power structures associated with this ideology. Particular attention will be paid to the role of the spirit-body connection in the novel: the role of personal and interpersonal expressions of religion in affecting the sickness.

Thompson, Marissa

Institution: ***CA - Chapman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Pamela Coelho *Rebecca Day* *Claire Annino*
Daniella Benabou *Marissa Thompson*

Abstract Name: The Dream Machine as Confluence: Hallucination, Neuro-Diversity, and the Creative Industries.

Our research project focusses on how a social media campaign was designed and implemented to explore how people engaged with the ideas of dreams and hallucinations. Specifically, the class project involved working collectively, and in four dedicated groups, to build a dream machine* and research the idea of neuro-diversity and perception-diversity. The four groups were: designers, who constructed the dream machine; social media recorders, who developed a multi-platform media campaign for the project from inception to implementation, including documenting how the other groups worked and researched their areas; music composers who designed a soundtrack to accompany the machine; and multi-media poster designers, who researched the history and culture of the original dream machine to create a series of poster images. Each group required specific research focus as well as an interdisciplinary exchange across all the groups. In many ways we see this as 'confluence in action', breaking down disciplinary barriers to explore new ways of thinking about complex issues and ideas. Our presentation will articulate three key aspects of the project: how by working across multiple disciplines (notably, creativity studies, arts and humanities, cognitive sciences, communications) we came to understand better the confluence of ideas in practice; how various elements of social media can be utilized to explore wider philosophical and aesthetic issues; and how our University's program in Creative and Cultural Industries provided ways to connect across a wide and diverse audience to engage in the interdisciplinary nature of knowledge. In addition to the presentation, we would like to bring the dream machine to the conference so others might experience its hallucinatory effects and better appreciate the relationship between research and practice.*The dream machine was originally designed by the artist Brion Gysin and has been used in research to explore the idea of neuro-diversity and perception-diversity.

Thompson, Sam

Institution: ***MN - Hamline University***

Discipline: Public Health

Author/Contributors:
Emma Moe *Taylor Lander* *Sam Thompson*
Savannah Lyytinen *Serena King* *Laura Palombi*

Abstract Name: Community Engaged Partnerships With Southeast Asian Community Health Liaisons, Leaders, and Health Care Professionals: A Pilot Project on Opiate Awareness, Overdose and Psychoeducation

Opiate addiction and overdose is a major public health concern that disproportionately affects minority communities, yet little is known about the impact in Southeast Asian communities.1) Pilot a sustainable program of opiate awareness, pharmaceutical awareness, and education in Southeast Asian (SEA) communities. 2) Assess community needs around opiate education, prevention, and medical care for opiate addiction, and 3) Engage professionals (stakeholders) on SE Asian community needs. A three-part model included: 1) A train-the-trainer psychoeducational program delivered by community health liaisons (CHLs), 2) Stakeholder engagement around SEA opiate prevention, overdose prevention/reversal, and care (medical, mental health, pharmacy, and Narcan distribution professionals) and 3) Guided conversations with community leaders. Training sessions were delivered virtually, whereas community sessions varied in their delivery methods (verbally in a community's native language). Three community health liaison training sessions involved a train-the-trainer psychoeducational model on the nature of opiates, drug effects, pharmacist-patient communication, stigma, and community comfort in discussing opiates. A pharmacy professor delivered five two-hour training sessions for the CHLs. We held stakeholder conversations with pharmacy students, physicians, addiction counselors, and clinic supervisors. Common barriers identified were funding and availability of translators, stigma, transportation, and community awareness of resources available. Significant needs exist in SEA communities. First, we observed a lack of knowledge and awareness around opiates across communities. Program materials delivered in a narrative format were useful (per leader feedback). Several leaders and community members expressed concern about the community proliferation of online purchases of drugs marketed as painkillers. Third, community members may lack awareness of risks around opiates and addictive potential. Cultural factors and stigma prevent community members from seeking information and treatment, and there is a need for Narcan education and linguistically and culturally competent providers.

Thompson, Samantha

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Samantha Thompson,
Tyler Doyon

Abstract Name: **Biocatalytic Synthesis of Substituted Muconic Acids**

Catechol dioxygenases are non-heme iron ring-cleaving dioxygenases (RCDs) that are useful in producing highly conjugated products via ring cleavage of catechol substrates. These enzymes are often characterized for their ability to oxidatively break down phenolic waste products, enabling the bioremediation of benzene-derived pollutants and contributing to green chemistry initiatives. However, few studies have been pursued which seek to use these enzymes for synthetic purposes. For example, Type I RCDs generate muconic diacids, which have broad potential as synthetic building blocks to valuable molecules, such as adipic acid. Yet, most studies of Type I RCDs feature limited substrate scope exploration, low substrate concentrations, and almost no examples of preparative scale biocatalytic reactions. In this study, we sought to evaluate the potential of the Type I RCD chlorocatechol 1,2-dioxygenase (ClcA) for preparative scale synthesis. Previous studies of ClcA were focused on improving observed kinetic parameters by truncation of 13 C-terminal residues, generating the isoform ClcA_Δ13. However, there is little published information on the reactivity of ClcA_Δ13 with a broad variety of catechol substrates at high substrate concentrations. Our initial studies have focused on reactions of ClcA_Δ13 with simple catechol substrates at synthetically relevant concentrations to assess reaction yields. Our studies seek to optimize these reactions by evaluating other factors, such as temperature, pH and buffer composition. Using this information, we will perform milligram scale reactions to isolate and characterize the products of these reactions, demonstrating the synthetic potential of ClcA_Δ13 and related Type I RCDs.

Thompson, Steven

Institution: *NC - North Carolina State University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Steven Thompson *Kyla Bosh* *Katherine Saul*
Jacqueline Cole

Abstract Name: **Assessing Functional Limb Use in a Rat Model of Brachial Plexus Birth Injury**

Brachial plexus birth injury (BPBI) is a common perinatal condition affecting the cervical and first thoracic nerve roots. Children with persistent symptoms of BPBI experience upper-limb motor dysfunction and muscle paralysis, impairing their ability to perform daily tasks. Previous studies in rat models of BPBI have assessed function extrinsically via range of motion and grip strength but have not assessed spontaneous functional limb usage, an important indicator of functional deficits following injury. Our goal is to quantify paw usage preference to determine post-BPBI changes in forelimb function. We hypothesize BPBI, particularly with shoulder muscle contracture, will result in forelimb usage deficits. Three groups of Sprague Dawley rats underwent surgical neurectomy of C5-C6 nerve roots on postnatal days 3-6. Postganglionic and preganglionic neurectomy groups resulted in nerve damage with and without muscle contracture, respectively. A control sham neurectomy group experienced no nerve damage. The cylinder test was performed before sacrifice at 3, 4, 6, 8, 12, and 16 weeks post-surgery (n=2-24 per group per timepoint) to assess paw preference. Videos were recorded of rats exploring in a clear, vertical cylinder and analyzed for forepaw usage by counting how many times the rat pushed off the table, rested against the cylinder wall, and landed on the table with each and both forepaws. Total forepaw usage will be compared between groups and across timepoints via ANOVA with Tukey's correction.Preliminary data suggest that 1) rats with preganglionic injury tended to use their injured limb more than rats with postganglionic injury until week 8, and 2) in both injury groups, use of the injured limb was preferred least for vertical reach and rest against the wall compared to pushing off and landing. Spontaneous limb usage may provide predictions about the capacity to perform specific tasks and inform therapies in BPBI patients.

Thomson, Abigail

Institution: *NC - Elon University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Abigail Thomson *Caroline Ketcham* *Takudzwa Madzima*
Eric Hall

Abstract Name: **The Relationship Between Sex Hormones, Cognitive Function, and Mental Well-being Across the Menstrual Cycle**

Research shows women typically take longer to recover from concussions than men; however, there is little understanding of why. One of the most significant differences in males and females is their fluctuations in sex hormones. The goal of this study was to examine the relationship between estradiol and progesterone level fluctuations, neurocognitive performance, and concussion and mental well-being measures across a menstrual cycle. In a sample of 12 female identified participants, progesterone and estradiol levels were measured across the span of a month at week zero, two, and four, from both blood and saliva samples. At the time of each sample collection, the participants completed the Four-Dimensional Symptom Questionnaire (4DSQ; distress, depression, anxiety, and somatization scales), King-Devick (oculomotor assessment), and Immediate Post-concussion Assessment and Cognitive Testing (ImPACT; neurocognitive testing and concussion symptom scale). On the weeks not in the lab, the participants completed a survey asking about concussion symptoms (ImPACT) and their overall mental well-being (The Warwick-Edinburgh Mental Well-being Scale). In this survey, participants were also asked about the typical length of their period and the date of their last menstrual cycle. Using this information, the phase of the menstrual cycle at which each of the samples were collected was estimated and the change in each of the measures, including hormone levels, between the luteal and follicular phase was calculated. The data shows that as the change in estradiol levels increases, the verbal memory score on ImPACT decreases (r=-.801, 0.05) and anxiety and depression measure scores on the 4DSQ also decreases (r=-.828, 0.05; r=-.739, 0.05). No other significant correlations were found. The implications of this research is to add to the current literature and provide opportunity for education on the relationship between sex hormones, cognitive function, and mental well-being.

Thornton, Caleb

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Computer Science/Information Systems

Author/Contributors:
Caleb Thornton

Abstract Name: **Microgrid Communications Cybersecurity Comparisons**

The smart microgrid is a part of the general smart grid, which is defined as an electricity grid that enables intelligent operations via data communication. The smart microgrid can make intelligent decisions to produce significant savings by lowering energy costs and by managing onsite energy usage to avoid peak energy prices while supporting grid stability and improving return on investment. However, when utility companies extend their proprietary substation OT network to the Internet to cover the microgrids, they open the doors for cyberattacks. OT cyber securities are mostly focused on three main areas including the end device security, network access security, and infrastructure security. Cyberattacks on microgrids attack all areas and affect data integrity, data confidentiality, and data availability. The attacks can be implemented through remote access or plug-in media to compromise the data before or during transmission. Currently, in the power industry, most of the cybersecurity research is conducted on substation networks, while there is a few on microgrids. However, due to its distributed nature and remote access requirements, the microgrids communication network has a relatively loose protective environment, more complex platform, and is less professionally monitored. These factors make the microgrid an easier target for cyberattacks, hence requiring more specific cybersecurity research and defense measurements. In this paper, we focused on the cybersecurity issue in the microgrid. First, we explain the distinctive characteristics of the microgrid network and compare it with the substation network. Next, we discuss the main data acquisition protocols (Modbus, DNP3, GOOSE 61850, and SMV) and the time synchronization protocols (NTP, SNTP and PTP) and their cybersecurity options. Finally, we conclude with the guidelines on cybersecurity measurement in microgrids.

Thul, Emery

Institution: *MN - Hamline University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Emery Thul *Bridget Jacques-Fricke*

Abstract Name: **Designing DICE-X: A Course-based Undergraduate Research Experience Investigating Impact of Chemical Exposure on Neurodevelopment in Xenopus laevis**

Inequitable access to science education and opportunities is well-documented across all educational levels. One glaring disparity is in undergraduate research opportunities. The leading solution for these inequities is to implement course-based undergraduate research experiences (CUREs). Though the number of CUREs and the field of neuroscience are growing, few published CUREs exist within neuroscience. Additionally, while the impact of CUREs on women and people of color in STEM is relatively well-known, very little literature exists on first-generation and low-income (FGLI) students. To address these gaps, we designed a developmental neurobiology CURE, called DICE-X: Developmental Impacts of Chemical Exposure on Xenopus, and pre- and post-assessment tools that measure outcomes for underrepresented (particularly FGLI) students.To design DICE-X, we identified an overlap between relevant research in developmental neuroscience, desired learning outcomes, and feasible protocols given facility constraints. Chemical exposure during development is situated at the intersection of these categories, and it is fairly inexpensive to manipulate, making it an ideal experimental variable for undergraduates. We chose Xenopus as a model organism due to ease of husbandry and embryonic manipulation alongside access to an existing colony. The assessments were written after existing models with modifications specifically to determine FGLI outcomes.In the multi-week CURE, students explored primary literature in neurodevelopment and created proposals for novel research investigating developmental exposure to student-selected chemicals. Students then created spinal explant cultures to assess neurite outgrowth and student-selected behavioral assays to determine any behavioral deficiencies caused by chemical exposure. Students ultimately created posters summarizing their research projects and presented them to peers and faculty at Hamline University. Preliminary results from the assessment indicate gains in areas around self-efficacy and scientific identity. We hope that the dissemination of DICE-X and assessment data leads to an expansion of CUREs in neuroscience that will benefit all, including FGLI, students.

Tibben, Abigail

Institution: *IA - Iowa State University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Abigail Tibben,
Stacy Renfro,
Megan McGuire

Abstract Name: **Producing Datasets: Creating Mock Crime Scene Footwear Impressions Dataset**

One of the fundamental problems in forensic science is a lack of data. Creating datasets representative of casework is a challenge, because it can be difficult to obtain large quantities of images collected under the same protocol and with the same shoes. Though, the data collected in this way can be of significant use for researchers and training within forensic science disciplines. This project's main objective is to create an open-source database containing a sizeable number of high-quality images of shoe impressions. The team at the Center for Statistics and Applications in Forensic Evidence (CSAFE) worked to collect images that could be representative of those found at crime scenes and made publicly available to the broader forensic and research communities. With mixed impression types, flooring, lift techniques, and digital file types, the complete dataset will include nearly 800 shoeprint images contained in more than 1,700 digital files.Our presentation will focus on the best practices for developing a data collection process, writing protocols and publishing open-source datasets, with the intention of reproducibility and details on how/why the project is important, as well as the process we went through while working on it. Attendees will walk away (pun intended) knowing: The significance of larger data sets for researchers and training; Actionable solutions to various obstacles associated with large dataset collection; Essential considerations for writing data collection protocols; and The importance of open-source data.

Tichana, Kelvin Carrington

Institution: *GHA - Ashesi University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Kelvin Carrington Tichana

Abstract Name: **Machine Learning Recommender Systems**

Machine Learning has allowed evolution and versatility in data mining,manipulation, and pattern inference for informed decisions. Traditionally, recommender systems did not utilize machine learning and were only based on hard-coded instructions. This could not meet the ever-changing user behavior. The ML Recommender Systems project investigates theuse of Machine Learning in building recommender systems for multiple use cases. Examples of such use cases include recommender systems for movies to watch, music recommenders, and an adaptive controller for smart home technologies. A movie recommender system was built using the Python programming language and Google's open-source TensorFlow and TensorFlow Recommenders platforms. Through Google Colab, a TensorFlow dataset, MovieLens, was prepared for training, evaluation, and testing. A user interface was built with Anvil Works and pure HTML5, PHP, and Javascriptfor demonstration purposes only. Currently, the model for music recommendations is being trained using the same technologies.The adaptive controller for IoT intelligent homes is also currently being tested. This model accepts user data through how they interact with a low-cost Raspberry Pi-based smart home and uses that data for energy-saving recommendations. After testing this model with a locally built smart home system, I anticipate seeing improved energy usage in low-cost smart homes. Also, there is a plan to build different recommender systems for all possible datasets, such as images, numbers, andwords fore-commerce products, entertainment, text prediction, and search engines. Upon completion, the built models should be integrated into the business, entertainment, and utility tools to allow practical recommendations that users find helpful. However, this should not come at the expense of their security and privacy. As such, the built models should run locally within the systems so that inference and processing will not be remote.

Tichy, Saige

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Engineering/Applied Sciences**

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Maya Frodl,
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Sophie Gardiner

Abstract Name: **3D Printing to Improve Patient Outcomes for Mini-Thoracotomy Aortic Valve Replacements and Mini-Mitral Valve Repairs**

Aortic valve replacement (AVR) was established in the 1960's and has become a routine therapy to treat patients with severe aortic valve dysfunction. AVR is usually performed using a full sternotomy and cardiopulmonary bypass support. Since the late 1990's, minimally invasive procedures have been developed for aortic valve surgeries, such as the mini-thoracotomy AVR. These less invasive procedures claim reduced postoperative complications, shorter lengths of stays in the hospital, and lower mortality. However, the minimally invasive nature may provide challenges in the viewing of patient anatomy during the procedure. This project will provide the 3D printing capabilities needed to investigate if using 3D printed anatomical models for pre-operative planning and/or patient education will result in better patient outcomes for mini-thoracotomy AVR surgery, particularly in those with thoracic abnormalities. For selected patient cases, the Mayo Clinic Luther Campus will provide UWEC researchers with DICOM files for segmentation and 3D printing. The UWEC research team will perform the segmentation and provide the physical 3D anatomical model with initial feedback on accuracy from Mayo physicians. Ultimately, the Mayo Clinic collaborators will evaluate the effectiveness of using the 3D models in patient outcomes as well as patient education on the procedure.

Tickell, Joshua

Institution: *TX - San Jacinto College*

Discipline: **Earth & Environmental Sciences**

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Rudra Aryal,
Lok Lamsal

Abstract Name: **TRENDS AND VARIATIONS OF NO2 POLLUTION (2005-2019) OVER TEXAS: VIEW FROM THE GROUND AND SATELLITE**

Nitrogen oxide (NOx = NO + NO2) is a widely occurring air pollutant that impacts atmospheric chemistry and human health. NOx is formed from various sources, such as lightning, vehicle emissions, and various geological activities. In this study, we present the NO2 variations and trends from 2005 to 2019 over Texas using measurements from an Ozone Measuring Instrument (OMI) abroad, the NASA Aura satellite, and compare with in situ surface NO2 measurements from US Environmental Protection Agency (EPA) Air Quality System (AQS) network. Both OMI and AQS datasets display distinct emission reduction rates from 2005-to 2020, including the COVID-19 lockdown.

Tien, Demetrius

Institution: *CA - California State University - Long Beach*

Discipline: **General Humanities/Interdisciplinary Studies**

Author/Contributors:
Demetrius Tien

Abstract Name: **The Exhibition of the Chinese Lady: Racialization through the Representation of Afong Moy**

I will examine how the Chinese woman emerged as a category in exhibitions in the 19th century. My research analyzes the exhibition of Afong Moy, the first known Chinese woman in America. I question both, what it meant for exhibitors to represent her, as well how she was represented. Rather than assuming the representation of a Chinese body, I analyze the way in which Chinese as an ethnic category is produced through her. Unlike travel logs and newspapers, the exhibition obscures the divide between the audience and what is being represented. In other words, the exhibitions' display is taken as the real object. However, the exhibitors' claim to represent a real Chinese woman is contradictory as they simultaneously construct Moy as a character for exhibition. Her career begins as she is brought on a trading ship from Guangzhou to the United States where she is renamed, staged, directed, and constructed as an object to be observed and understood. As her exhibition is established, the characteristics of difference are outlined by the way in which she is decorated. Specifically, the bound foot becomes the fixation by which she is defined as ornamental and outside of time. Afong Moy then is a character that has been produced by those who depict her, and comes to represent the concept of a Chinese woman to her audiences. The Chinese woman as a concept then, is not a preexisting, immutable category, but is constructed by those in the privileged position to represent it.

Tienor, Maggie

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Communication Science and Disorders

Author/Contributors:
Maggie Tienor,
Lynn Gilbertson,
Lourdes Martinez-Nieto

Abstract Name: Speech-Language Pathologist Confidence and Preparedness When Working With Bilingual Children

Accredited graduate programs in speech-language pathology are required to provide evidence that students attain competence in assessing and serving clients from diverse cultural and linguistic backgrounds. The American Speech Language Hearing Association (ASHA) recently developed and implemented courses and continuing education for professionals on how to work with bilingual populations. While these resources are useful, they do not clarify the levels of confidence and preparedness experienced by the professionals using them. Recent work evaluated SLP confidence, but did not report on students in SLP graduate programs, an additional group that is preparing to work with bilingual children. Given the evolution of the sociocultural climate, paired with changes in demographics and certification requirements, our work aims to identify more current levels of confidence and preparedness of SLPs, as well as future SLPs in Wisconsin when providing services to school-age bilingual children. Self-perception of confidence and preparedness may have clinical and academic implications with respect to effectiveness in providing services to school-age bilingual children, as well as parents' involvement in their child's therapy and maintenance of the native language. Information about practitioner and student confidence may inform SLP training programs on how to improve or modify graduate experiences and continuing education to support professionals in the field in serving school-age bilingual children. It is expected that previous experience working with bilingual children will lead to higher confidence and preparedness in current and future SLPs. It is also predicted that SLPs and future SLPs who are bilingual will report feeling more confident and prepared when working with bilingual children. Due to complex variables, current perceptions of confidence and preparedness are unknown.

Tietz, Zoe

Institution: *WI - University of Wisconsin-Superior*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Zoe Tietz

Abstract Name: Period Poverty within the Twin Ports and Beyond

Period poverty, the lack of access to menstruation supplies and facilities, creates inequality within everyday life. Previous research looks at urban areas to assess the inequality faced within menstruation (Sector-Turner et al., 2020). A deeper understanding of availability of educational resources related to menstruation and the challenges faced by those who menstruate is needed. This study looks specifically at states within the Midwest. Assessing areas such as Duluth and Superior, a metropolitan rural area, allows for a better understanding of the overall effect of menstruation inequalities. Often those facing period poverty miss important events such as school or work due to lack of supplies. We collected data from a range of students, many being undergraduates from a variety of socioeconomic backgrounds. A survey was distributed electronically, and participants were encouraged to share this link with peers. A qualitative and quantitative survey was provided to the public for a two-week period. These survey results brought forth the inequalities faced by those who menstruate. Menstruation inequality was experienced by groups above and below the poverty line. Discovering the challenges faced by those who menstruate provides a deeper understanding to the limitations faced within daily routines.

Tin, Michelle

Institution: *UT - University of Utah*

Discipline: **Biology**

Author/Contributors:
Michelle Tin,
Ayako Yamaguchi

Abstract Name: **Resistance to Opioid Induced Respiratory Depression in Xenopus laevis**

Opioid induced respiratory depression (OIRD) is a major cause of opioid related death. In mammals, OIRD is, in part, caused by a hyperpolarization of respiratory neurons in the brainstem due to opioids binding to mu-opioid receptors. However, preliminary results obtained from the African clawed frog (Xenopus laevis) suggested that their respiratory system may be less susceptible to opioids compared to mammals. Here, we hypothesized that the respiratory system of X. laevisis resistant to opioids. IsolatedXenopusbrains generate respiratory activity that can be readily recorded via the laryngeal nerve over 12 hours. Taking advantage of this preparation, we examined the breathing activity of the ex vivo frog brains in the presence of variable concentrations of a mu-opioid receptor agonist (DAMGO) to test this hypothesis. The results reveal that the respiratory system of X. laevisis indeed tolerant to opioids compared to mammals; in neonatal mice, the Pre-Bötzinger complex (which is responsible for respiratory inspiration in mammals) stops its activity in the presence of 100nM of DAMGO whereas the application of 500nM of DAMGO did not block the respiratory activity ofXenopus. The results of this research sets the stage to explore the neural mechanisms ofXenopusopioid resistance.

Tindall, Rebekah

Institution: *AZ - Northern Arizona University*

Discipline: **English/Linguistics**

Author/Contributors:
Rebekah Tindall

Abstract Name: **The Gun Control Debate: A Polarized Narrative**

The debate around gun control in America is a shining example of our severely polarized political system, and how issues quickly become partisan. The narrative has been split into two sides, divided by party, to the point where the debate is no longer productive. Each narrative views the gun-control debate through a terministic screen that prevents the issue from being viewed as a whole picture. Each side, however, does not include key pieces of information and therefore loses credibility. It is also harmful to divide the argument into two narratives, because it prevents a single solution that works for everyone from being found. In order to satisfy one side of the debate, one must betray the other side. In reality, there is actually a significant amount of common ground between Americans. Most Americans are in agreement that there needs to be restrictions in place for the purchase of guns, as well as restrictions on what type of guns can be put into public circulation. Politicians primarily ignore this common-ground in order to keep the issue partisan, however. By promoting division between Americans, they can continue to use the issue as a way to gain votes in elections. Breaking away from the partisan perspective, placing restrictions on who can purchase guns, and extensive background checks prior to purchasing should all be implemented. Placing caps and restrictions on campaign donations by outside sources is another step that needs to be taken to ensure political figures are not being financially influenced to avoid taking action. An issue that causes so much destruction and death yearly cannot be maintained as a partisan issue or a ploy for politicians to use to their advantage. By working with what is already agreed on, a significant amount of action can be taken to prevent unnecessary gun violence.

Tisdale, Tecora

Institution: *PA - Duquesne University*

Discipline: **Biology**

Author/Contributors:
Abigail Maus,
Tecora Tisdale,
Taylor McClure,
Alexandria Woods,
Michael Jensen-Seaman

Abstract Name: **Length Variation at a Microsatellite in the Human Relaxin (RLN2) Promoter Affects Transcription Levels in Vitro**

Complications with preterm birth are the leading cause of infant mortality and morbidity worldwide. Several factors contribute to susceptibility, but previous studies identified an association with the promoter region of the relaxin gene (RLN2) and levels of relaxin during pregnancy. RLN2 codes for human relaxin hormone, which is involved in preparation of membranes and cervical tissue at the onset of labor. We hypothesize that different compositions of a $(CT)_n(GT)_m$ microsatellite within the relaxin promoter will produce different levels of relaxin. To test our hypothesis, we amplified the ~1kb upstream promoter region from four different previously genotyped human DNA samples, ligated the products into a pNL1.1 luciferase reporter vector, and transfected into a human placental cell line to quantify transcription in vitro using a luciferase assay. DNA sequencing confirmed these promoter alleles contained 23, 28, 33, and 38 microsatellite repeat units. Differences in transcription levels among alleles were evaluated with a one-way ANOVA test. These results will be discussed in light of human genetic variation at RLN2 and susceptibility to preterm birth.

Tisha, Tahmina

Institution: *FL - Embry - Riddle Aeronautical University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Sophie DuBois,
Jorge Diaz Albelo,
Tahmina Tisha

Abstract Name: **Exploring Underrepresented Aviation Students' Mental Health and Success in Higher Education: A Phenomenological Study**

In recent years, college students' mental health has significantly declined, especially within minority student populations. Within the aviation industry, unattended mental health concerns in pilots have led to various fatal accidents. With devastating mental health-related incidents in the aviation industry, educational institutions must take the necessary steps to set their students up for long-term success in every aspect of life. Furthermore, due to the ongoing pilot shortage crisis across the United States, the aviation and aerospace industry has launched diversity, equity, and inclusion (DEI) campaigns designed to attract future employees from underrepresented groups. This project aimed to study the student experience regarding mental health in underrepresented minorities in aviation and aerospace degree programs. To do so, the researchers deemed it crucial to understand the aviation and aerospace students' psychological symptoms through the use of a feasible and reliable instrument such as the Counseling Center Assessment of Psychological Symptoms (CCAPS-34). The resulting data was used to provide the initial step in determining the acceptability, feasibility, and potential of the CCAPS-34 as a measure of distress in help-seeking aviation and aerospace students. Additionally, qualitative focus groups were conducted across two aviation-focused higher education campuses to understand the needs and wants for mental health. Our results showed an ongoing need for widespread, comprehensive reform through social support, promotion of psychological well-being, and activities with minimal psychological distress.

Titus, Kendyl

Institution: *VA - Longwood University*

Discipline: Social Work

Author/Contributors:
Kendyl Titus

Abstract Name: **Mental Health and Undergraduate Social Work Education: Identifying the Gaps**

Social work is one of the leading careers in mental health treatment and research. Many resources are available to graduate/clinical social work students as they learn to assess, diagnose, and treat mental health disorders. Unfortunately, the same is not true regarding resources for undergraduate/generalist-level social work students. A brief review of undergraduate social work programs in the South Atlantic region of the United States showed that most undergraduate social work curriculums do not include courses specific to mental health. Because generalist social work practitioners engage with a diverse clientele, many of whom experience mental illness, undergraduate social work students must receive structured and focused instruction to increase their mental health literacy. Therefore, this research explores how undergraduate social work professors incorporate mental health content into their courses. I do this by conducting a thorough literature review and engaging in IRB-approved research to survey how social work professors provide mental health education in undergraduate social work classes. My proposal aims to call attention to the significant gap in mental health education at the undergraduate level. By advocating for undergraduate mental health education, I believe society will benefit tremendously, as holistic education will allow generalist social workers to provide more inclusive and competent services to their clients. By providing a significant focus on mental health education, we will not only honor diversity among our clients but will also increase our inclusion and competency in treatment, intervention, and support.

Tochimani, Junior

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

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Abstract Name: **Social Media and Self-esteem**

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negativeinformation that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development.The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Toenjes, Julia

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Julia Toenjes,
Bella Thovson

Abstract Name: **Early Cortisol Exposure Alters Morphology of Zebrafish Embryos**

Stress hormones such as cortisol are essential for development and play a particularly important role in human fetal development of the brain, lungs, and kidneys. Excess exposure to cortisol from stressed mothers is known to negatively affect fetal neurodevelopment. However, the specific changes and mechanisms involved in altered development are not well characterized. We investigated how exposure to increased cortisol affects early embryonic development in zebrafish. Embryos were exposed to different concentrations of cortisol (10-254uM) at 3 hours post fertilization (hpf). Zebrafish were then observed and imaged at 96 hpf via brightfield microscopy and subsequently screened for abnormal phenotypes. Nine phenotypes were screened for: survival, body axis curvature, yolk sac shape or size, craniofacial development, muscle development, body length, pericardial edema, yolk sac edema, and blood pooling in the head/yolk sac. Fish were then categorized based on the number of phenotypes they displayed as none, mild, or severe. Initial results suggest dose-dependent changes in morphological development of zebrafish embryos exposed to cortisol with the most common abnormalities being pericardial edema and abnormal yolk-sac size/shape. In addition, there was no change in survival rate between zebrafish exposed to different concentrations of cortisol. Results from these experiments can help define morphological and functional alterations at cortisol concentrations relevant to understanding fetal development under maternal stress in humans.

Tokala, Abhi Roop Reddy

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Abhi Roop Reddy Tokala

Abstract Name: **The effect of variation in Cerium in Aluminum-Cerium Alloys on microstructure and hardness**

Traditional aluminum alloys are lightweight and cost-efficient but lose their mechanical strength at elevated temperatures. Combining aluminum with cerium creates easy-to-cast Al-Ce alloys that exhibitdramatically improved high-temperature performance. A set of aluminum-cerium alloys at nine compositions ranging from 2% cerium to 18% cerium (weight percentages-wt.%) were cast, and the effect of composition on the microstructure and hardness was studied. Micrographs revealed two major phases in all the cast alloys, including primaryα-Al and intermetallic Al11Ce3 phases. The volume % of intermetallic phase, hardness, and density increased with cerium content and are reported along with the average sizes of each phase. Until 14wt% Cerium, the microstructure showed primary-α aluminum and eutectic (lamellar structure of primary-α aluminum and intermetallic). Above the eutectic compositions of 14wt% Cerium, the microstructure showed primary Al11Ce3 particles and the eutectic phase. The current work helps understand the effect of the variations in composition on microstructure and selected properties. This understanding can improve the widespread adoption of Al-Ce alloys.

Tokarski, Madilyn

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

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Abstract Name: **Yearly Survival and Growth Rates of Propagated Fatmuckets (Lampsilis siliquoidea) in Central Wisconsin**

Freshwater mussels are key members of riverine ecosystems and are crucial for improving water quality. Mussels serve as valuable indicator species and suffer from many environmental disturbances, but despite their importance, large gaps remain in knowledge of freshwater mussels in Wisconsin. We measured the survival and growth of mussels exposed to ambient conditions in two streams in Central Wisconsin. Both selected streams included those that support diverse mussel assemblies. On October 29th, 2021, we received 120 Fat Muckets (Lampsilis siliquoidea) from the Genoa Fish Hatchery, measured, then released them into suitable areas on the Mill Creek; the Plover River Near Stevens Point, WI. Before release, mussels at the Mill Creek site averaged 1.853 cm in length, 1.03 cm in width, and 0.52 cm in thickness. At the Plover River site, mussels averaged 1.859 cm in length, 1.068 cm in width, and 0.546 cm in thickness. We utilized silos to encompass the 1.5-year-old mussels. Each site has 1 silo, containing 15 individuals per silo. Our objective is to determine seasonal survivorship and growth rates throughout our year-long study. Experimentation at these sites will provide an indication to determine which areas are suitable for future reintroductions. We expect 1) Mussel growth and survival will be significantly reduced in the winter months, compared to the summer months. 2) Mussel growth and survival will be significantly different between the two sites. These sites were measured monthly beginning April 21st and lastly October 21st, 2022. This is part of an ongoing study through the University of Wisconsin – Stevens Point's student chapter of The Wildlife Society.

Tomasello, Joseph

Institution: *NJ - Kean University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Joseph Tomasello

Abstract Name: **A Natural Language Processing Analysis of Reddit as a Social Media Platform for Discussions on Mental Health**

Following a substantial destigmatization effort this past decade, mental health has emerged as an area of intense interest to the general populace, with discussions on the subject cropping up seemingly everywhere. This is particularly true online, where more and more spaces are being set up specifically for users to offer any relevant thoughts, opinions, advice, or even first-hand experience with the subject. For the purposes of this study, post data related to mental health from over a 4-year period was sourced from a set of targeted communities on one the web's largest and most active social platforms, Reddit.com, and anatomized in terms of both a sentiment analysis and topic model using a Python-based toolset and Natural Language Processing (NLP) techniques. This work was undertaken in an attempt to uncover how mental health is most often approached and viewed by the site's contributing userbase, along with precisely what topics typically lie at the forefront of mental health discussion on the site. On the sentiment analysis side, results indicated that a majority of the posts from the collected dataset could be categorized as negative in tone, whereas the highest charting pinpointed emotions identified were found to be sadness, fear, trust, and anticipation. Then, on the topic modeling end, "time", "life", "people", "friend", and "anxiety" were found to be the top five most frequently used significant terms amongst post content, while "Question", "Need Support", and "Venting" were identified as the most common tags used to typify the different kinds of posts made about mental health on the site. Additional work is planned to extend the topic modeling results through the application of more sophisticated machine learning techniques, as well as the inclusion of comment data as a vector for analysis.

Tomita, Isabelle

Institution: *VA - George Mason University*

Discipline: Criminal Justice/Legal Studies

Author/Contributors:
Isabelle Tomita,
Alexa Buckner

Abstract Name: **Correctional Compassion: Examining Age and Empathy Among Correctional Officers Working in Restricted Housing Units**

Currently, little research considers empathy among those working in restricted housing units (RHUs/solitary confinement). The present research explores empathy and other characteristics among correctional officers (COs) working in RHUs. Data for the present research comes from 89 semi-structured interviews with COs working in six male prisons and one female prison between 2017 and 2019. Interviews were coded using ATLAS.ti, a qualitative data management software, and were coded using a semi-grounded technique, which allowed for themes to emerge organically, while also allowing researchers to code for themes such as age, perceptions of positive or negative characteristics, interpersonal relationships, and the definitions and perceptions of empathy. During analysis, COs were grouped into the following age groups: young adults (20 to 39 years old), middle adults (40 to 59 years old), and older adults (60 to 80 years old). Within their respective age groups, individuals were placed in subgroups pertaining to their perceived empathy and positive or negative characteristics. The three subgroups were, “displayed empathy and positive characteristics”, “not enough information”, and “lacking a display of empathy and/or displayed negative characteristics”. Preliminary analysis suggests that COs in the “Older Adults” group consistently report the most negative characteristics and reported lacking empathy compared to the other age groups. Preliminary findings suggest that older COs display low levels of empathy, which is insightful in considering whether there should be an age cap for working in RHUs.Further, theoretical implications include expanding current literature about COs working in RHUs and suggests that age may be important when considering empathy and job performance.

Tomlin, Casey

Institution: *TN - Middle Tennessee State University*

Discipline: Biology

Author/Contributors:
Yangseung Jeong,
Casey Tomlin,
Leslie Gonzalez

Abstract Name: **Sex and age estimation using CT images in Forensic Anthropology**

Forensic anthropologists reconstruct the biological profile (e.g., ancestry, sex, and age) of skeletal remains for victim identification at a crime scene. However, the preservation state of the skeletal remains may be compromised due to taphonomic factors, which requires alternative methods for assessing morphological features present on the bones. Bone mineral density (BMD) is known to be affected by sex and age of individuals. In this regard, sexual differences in BMD and its relationship with age have been studied. Recently, three-dimensional (3D) imaging technology such as computed tomography (CT) has been popularly used for forensic anthropological examination. The purpose of this study is to generate new methods for sex and age estimation from the Korean skeletal remains using CT data and related software. In this study, a new concept, digital bone loss (DBL), will be introduced. Whole body CT scan data from 240 Koreans (119 males, 121 females) were studied. Mean ages of the samples are 55.1 years and 53.6 years for males and females, respectively. Three open-source software (3D Slicer, Meshmixer, and CloudCompare) were used to calculate DBL. In this study, DBL is defined as the ratio of loss in the number of faces between two 3D models which are reconstructed using different thresholds in the Threshold tool of the Segment Editor module of 3D Slicer. Logistic regression models and linear regression models were generated for sex and age estimation, respectively. This study suggests that DBL can be possibly used as a proxy for BMD and thus, can serve as an indicator for sex and age estimation in forensic anthropology.

Tompkins, Christopher

Institution: *TN - University of Tennessee at Chattanooga*

Discipline: **Mathematics**

Author/Contributors:
Christopher Tompkins

Abstract Name: **Drones as a supplement to medical transportation in densely populated urban areas.**

As major cities have their infrastructure struggle to keep up with the density of urban life and the influx of people moving into city cores, the movement of supplies within a city core will become a tangible issue. The delivery drone enables the use of open skies to move critical medical supplies between suppliers and demand points. This will allow healthcare operations to operate smoother while increasing the availability of niche treatment options. This procedure will enable savings in the healthcare industry, as it is easier to move an antivenom to a patient versus moving the patient to a Tier 1 trauma center that carries the antivenom. Diverse mathematical models have been proposed to address this problem. In this study, we use an existing model in the literature and analyze the computational stability using a real test case. Further, we investigate a new model capable of determining optimal distribution center locations and their corresponding service locations by introducing two objective functions.

Topol, Colin

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: **Biology**

Author/Contributors:
Morgan Sabol *Colin Topol*

Abstract Name: **Novel insights on the genetic identification of giant knotweed species in Wisconsin (genus Reynoutria, Polygonaceae), using the nuclear LEAFY gene**

Knotweed plants in the genus Reynoutria are native to eastern Asia, but they have become troublesome invasive weeds in other parts of the world. Two species grow in North America: the Japanese Knotweed (R. japonica) and Giant Knotweed (R. sachalinensis), as well as a hybrid known as Bohemian Knotweed (R. × bohemica). The separate species may have different ecological tolerances, competitive strengths, or susceptibilities to herbicides or biocontrol agents, and therefore it is important to identify them correctly. Because of the close relationships among invasive knotweeds and their propensity to hybridize, identification using molecular methods is particularly useful. Previous studies have used the nuclear LEAFY gene to identify parent species and hybrids in the native and invasive range, but the current data consists only of the second intron of the LEAFY gene. Almost nothing is known about the protein-coding portion of the gene, and knowing more about protein differences between R. japonica and R. sachalinensis might have some bearing on the biological function of these invasive plants. In this project, we set out to sequence a larger portion of the LEAFY gene in Reynoutria species, to enable a comparison of protein sequences and potentially to discover new diagnostic regions of the sequence. Identifying the rest of the sequence will offer us more tools for easily identifying hybrids. We designed new PCR primers by comparing previously published LEAFY gene sequences from related species in the plant family Polygonaceae, and we used these to sequence new portions of the gene for Reynoutria species. We were able to sequence the entire second exon for both parent species and hybrids, as well as the first intron which had not been sequenced before. We are working to develop specific PCR primers that can identify species and hybrids more economically.

Torres, Aaron

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: **Physics/Astronomy**

Author/Contributors:
Michael Dombrowsky,
Aaron Torres,
Clifton Murray,
Victor French

Abstract Name: **Electrode Sharpness, Spark Gap, and Spark Prevention**

Ben Franklin's experiments with lightning in the 1700's showed that sharp-tipped metal rods reduce the chances of a strike near the rod itself. This has been confirmed as recently as the early 2000's e.g. by C.B. Moore et al, 2000, 2002, in research with actual thunderclouds. Similarly, sharp-tipped "needle" electrodes are commonly observed to prevent fully-developed sparks from laboratory electrostatic charge generators. In this case, (1) just how sharp must the electrodes be for spark prevention? And (2) by what process does a sharp electrode prevent emphatic sparks? We seek to answer these questions experimentally, by (1) using a Van de Graaf charge generator with spherical-tipped "receiving" electrodes of varying sizes, and (2) by investigating the phenomenon of "corona" as the discharging mechanism: What is corona? How does it differ from an emphatic spark? We compare our small-scale findings to the present view of how lightning rods reduce the chances of nearby strikes.

Torres, Kareem

Institution: *CA - California State University - Fullerton*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Lilibeth Martinez,
Kareem Torres,
Paul Tablada,
Ella Ben-Hagai,
Kaiulani Gonzales

Abstract Name: **Comparing Trajectories Toward Activism Amongst Asian American and Latinx Young Adults**

Following the murder of George Floyd, the Black Lives Matter movement inspired an increased awareness of social injustices and racism in America. In this research, we examine how the anti-racism movement that followed this historical event impacted Latinx and Asian American young adults and their social activism. We conducted in-depth interviews with Asian American (n=12) and Latinx (n=12) emerging adults who identified as activists. Utilizing Interpretive Phenomenological Analysis we examined recurring themes in participants' life stories that explained their involvement in activism. We found that both Asian and Latinx participants were motivated to join political-cultural heritage organizations to bridge and integrate their American and ethnic cultural identities. Prejudice against the Latinx community motivated Latinx participants to become involved in cultural-political organizations in comparison to Asian American involvement in organizations alike, which led to an increased awareness of anti-Asian racism. The rise of the Black Lives Matter movement motivated Asian American activists to advocate against Asian discrimination. In contrast, the Latinx participants were more motivated towards coalitional activism for people of color, specifically Black and Brown. This research illuminates the similarities and differences in trajectories toward activism for Latinx and Asian American young adults.

Torres, Maylyn

Institution: *CA - University of California - Merced*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
Maylyn Torres

Abstract Name: Gateway to Merced: Queer Experience

Merced has been commonly known as the “Gateway to Yosemite” for decades. A small town that is just a stop on the way to other areas. As a result, there is a collaborative effort to gather information from underrepresented groups in Merced County to showcase the value of Merced. This effort also aims to produce open-ended discussions and embrace all aspects of the community. The purpose of my project is to gather the history and experiences of the LGBTQIA+ community in Merced County since there is near to none recorded. We have interviewed individuals who have experienced or viewed the changes in how the LGBTQIA+ community is treated and included in the community. These interviews are conducted and recorded through video and audio. They are then transcribed and preserved as oral histories. The results will likely exhibit discrimination and negative actions against the community prior to the 2000s. The results will also examine how the existence of the University of California, Merced has had an impact in pushing the Merced community to be more forthcoming with its support of the LGBTQIA+ community. The Merced area has multiple communities that have been overlooked due to the lack of sharing experiences with the mass public. There are many unique and interesting narratives that deserve to be preserved and publicized to frame the true value of the area. In collecting this information for Merced County, there is hope that this may inspire others to do the same for their communities.

Torres, Sebastian

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Torres *Nathan Hau* *Emily Vanderpas,*
Samuel Petit *Tamim Rajjo* *Brandon Hidaka*

Abstract Name: Systematic Review and Meta-Analysis of how Heat and Antipyretics Affect the Course of Viral Upper Respiratory Infections in Adults

Viral upper respiratory infections (URIs) are common (i.e. the common cold) and have caused pandemics in 1918 and 2020. URIs are frequently treated with fever-blocking medications (antipyretics, like acetaminophen or ibuprofen), because they reduce symptoms. However, feveris an evolutionarily-conserved response to infection that mechanistically enhances various immune processes and experimentally improves survival in animals. Human studies exploring the effects of antipyretics on the course or outcome of viral URIs are inconsistent. We performed a systematic review to see how body temperature modulation affects the course of viral URIs in adults. Our primary outcome was time to symptom resolution. We used predefined search criteria of peer-reviewed articles on Embase, CINAHL, PubMed, and Cochrane databases. Inclusion criteria included observational studies and randomized controlled trials of viral URIs (e.g. no antibiotics) in adults that compared antipyretics or heat-based therapies (e.g. sauna or exercise) to a control group. Each article was reviewed by two independent reviewers with discrepancies resolved by a third party. We reviewed the abstract and title of 8886 articles and 140 full texts. Thirty-one studies met inclusion criteria for data extraction, of which 27 studies tested antipyretics and 3 tested heat-based therapies. There was significant heterogeneity among studies and only five studies reported the primary outcome. Meta-analysis of randomized controlled trials found no significant effect of antipyretic use on the average number of days it took to resolve an URI: -0.2 days (95% CI: -1.3 to 1.0) comparing antipyretic group versus control. In conclusion, we did not find evidence that antipyretics significantly prolong URIs overall. However, there may be other costs of blocking fever in URIs (e.g. complications like pneumonia) or antipyretics may prolong illness in specific types of infections or patients. Our inconclusive findings underscore the importance of further research into this common clinical scenario.

Tovar Briones, Ramona

Institution: ***TX - Texas Woman's University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Ramona Tovar-Briones *Breandrea Diaz* *Kimhab Sor*
Dona Varghese *Hunter Alvis* *Rhett Rigby*

Abstract Name: Pressurized Device For Mitigating Atrophy in Soleus During Long-Duration Spaceflight

Astronauts experience many microgravity-induced neuromuscular issues during spaceflight, including the decline in skeletal muscle mass and neuromuscular activation. The removal of support withdrawal contributes to space-induced muscle atrophy by disrupting sensorimotor connections at the muscle and neuronal levels. Rapid degradation of muscle mass and tone, particularly in anti-gravity postural muscles, compromise the ability to walk and stand after long-duration spaceflight. The objective of this project was to design and fabricate a specialized boot with an insole that applies oscillating pneumatic pressure, therapy reactivating soleus mechanoreceptors. The boot included two airbags,exerting 40 kPa of pressure each,placed directly on the sole of the foot located at the calcaneus and the metatarsals. Adjustable straps accommodated were added to help stabilize the ankle and provide security. The airbags were programmed to inflate and deflate every 3 seconds over a 20-min period every hour for 6 hours. To test the efficacy of the boot, surface electromyography (sEMG) was used to detect neuromuscular activity in the soleus. Following the Surface Electromyography for the Non-Invasive Assessment of Muscles guidelines, one pair of electrodes was placed at ⅔ of the line between the medial condyle of the femur to the medial malleolus for the soleus muscle, and a second pair of electrodes was placed at ⅓of the line between the head of the fibula and the heel to read activation of the gastrocnemius. The system was grounded at the tibial tuberosity. When the airbags inflated, the soleus produced an increased amplitude and frequency with the ankle in a neutral position.These results indicate that there was neuromuscular activity created by the boot,which indicates that the device will help in attenuating the negative neuromuscular adaptations in the soleus via afferent signaling.

Towle, Morgan

Institution: ***PA - Millersville University***

Discipline: Communication/Journalism

Author/Contributors:
Morgan Towle

Abstract Name: Men Managing Body Image and Appearance through Clothing

The current study follows previous research conducted in 2004 that examined men managing body image and appearance using clothing. Clothing is a tool that can be used to assist a positive body image and can also be used to cover up negatively viewed aspects of one's body. A review of the literature reveals appearance management, body image, practicality, and cultural ideals are reoccurring themes in the literature on men's clothing presentation. There is an existing belief that men lack body image issues. However, this is a rejected notion as many men have a drive for muscularity and a yearning to prove their body's worth, yet would not admit to caring about their appearance or body image. This study will survey men who attend Millersville University during the Spring 2023 semester to determine how clothing is used to communicate body image and a desirable appearance. Four primary questions will be asked to gather data based on several factors, including body image feelings and hiding or emphasizing aspects of one's body. The data will be coded using 4 themes, which consist of cultural ideals, practicality, body image, and appearance management. The researcher may also code for new themes as they emerge from the data. Using these themes, the researcher plans to investigate similarities and differences between groups based on the information gathered from demographic questions. This study hopes to add to the limited existing knowledge on men's body image and appearance management techniques. As of now the researcher is unsurewhat her data will reveal, however, if it follows previous researcher's datait may conclude that men value practicality, men believe they should not care about how they look, clothes are used to conceal or reveal, and clothes fit a cultural ideal.

Tracey, Grace

Institution: *IA - Iowa State University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Grace Tracey

Abstract Name: **An Examination of the Feminine Perspective of Death: Classical Greece**

In studying ancient Greek history, just like in other periods, the roles and activities of women, not to mention their thoughts and opinions, were mostly overlooked until recent decades. This project explores the women's perspectives of death during the Classical Greek period, roughly the 5th and 4th centuries BCE. This project brings women's involvement and understanding to the forefront in examining death, an experience universal to all cultures. While some scholars have analyzed various literary texts regarding death and dying, my study combines written evidence and archaeological remains, such as funerary stelae and painted pottery. The various archaeological remains are examined in their funerary context and decorations. Certain written evidence will also be examined. Women could not have official public roles, and they do not usually appear in written histories and documents. However, female characters are often depicted in Greek plays, making them a source of literary evidence. Furthermore, women were responsible for preparing the deceased's body and were the primary mourners at Greek funerals. Because these were private ceremonies, we can search for their perspectives on the objects and artworks associated with funerals. The main goal of my project is to understand what Greek women at this time thought about the process of dying, death itself, and the acts of mourning.

Tran, Brooke

Institution: *CA - University of the Pacific*

Discipline: Sociology

Author/Contributors:
Brooke Tran

Abstract Name: **Equity & Access: a Case Study on Educational Attainment of Vietnamese American Graduates**

This project addresses the wrongful stereotypes and assumptions of the Model Minority Myth (MMM) and unravels claims on inherent racial and ethnic qualities determining educational outcomes through mixed methods research: quantitative survey responses and qualitative interviews. This project is inspired by the framework of Participatory Action Research (PAR), making this research project less of an excavation but more of a means of understanding community needs through acknowledging lived experiences. Participants are from the researcher's alma mater, La Quinta High School (Westminster, CA) which neighbors a "Little Saigon" community and graduates large populations of Vietnamese American students. The focus on Vietnamese Americans' sense of identity and belonging, general well-being, and educational journey helps to disaggregate data within the Asian American community to explore the experiences of an often "invisible" group among Southeast Asians. Of the survey's 26 respondents that provided contact information, 10 signed up for and completed semi-structured interviews (N = 10). The interview questions were split up into four chronological sections: (1) Basic demographic information regarding identity (2) Family history and background on household number and dynamics, (im)migration history, jobs, education (3) Individual education experiences and tracking from elementary school, middle school, high school, college and, if applicable, graduate school (4) Reflection on identity, MMM, and other racialized educational experiences. Grounded in Pierre Bourdieu's asset-based theories of social, cultural, and economic capital, the interviews reveal barriers for educational attainment for Vietnamese Americans. Themes of requests for support emerge in the forms of culturally-responsive curriculum, language and cultural accessibility within educational institutions, and college preparatory to handle the "hidden curriculum."Keywords: College prepatory, Asian Americans, educational equity, social and cultural capital

Tran, Diana

Institution: ***TX - Lone Star College***

Discipline: **Environmental Studies**

Author/Contributors:
Diana Tran

Abstract Name: **Creating a Cost-Benefit Analysis Guideline from Ecological Economics: How Can This Be Applied to Landfill Mining?**

With an aim to examine the profitability of landfill mining, a cost-benefit analysis model was developed using ecological economics principles. The research combines the traditional business analytics cost-benefit analysis (CBA) with the policymaking CBA process from Harvard Business School Online and the Harvard School of Public Health respectively. This study also incorporates Paul Hawken's ecological commerce concepts to create a new cost-benefit analysis model for private business applications. The new CBA process consists of six major steps, focusing mainly on step two (identifying the cost and benefits), and step three (assigning the common currency value to each cost and benefit). By using landfill mining as an example, ecological principles are showcased in a practical application. Besides suggesting an alternate use of landfills, the new guideline for an ecological cost-benefit analysis provides a deeper understanding of the true value of waste. This research can set an example for how businesses could utilize waste and potentially adopt a "no waste" mindset.

Tran, Kristine

Institution: ***VA - Virginia Commonwealth University***

Discipline: **Race, Gender, & Sexuality Studies**

Author/Contributors:
Kristine Tran

Abstract Name: **Normalization of the Infantilized Woman and Sexual Girl**

Although beauty and attraction are subjective, the beauty industry calls upon women and young girls to "enhance their features" via cosmetic products, plastic surgery, harsh diets and intense exercise regimens to be considered attractive. Victoria's Secret, one of America's most popular lingerie companies, was founded by a man despite the store's goal to market lingerie for women. If the male gaze is responsible for the general definition of the ideal woman, then the impact of the portrayal of and language used towards women in American popular media between the 1950s and 1970s must be examined, because acknowledgment of American societal expectations for feminine beauty is necessary to understand deeper, gender-related issues, such as the infantilization of adult women and sexualization of young girls. To understand the effect of thesesocietal expectations, three women who played a key part in changing societal norms for women were compared: Marilyn Monroe, Lucille Ball, and Julie Newmar. By cross-referencing key examples of these adult women being infantilized on television, in addition to their advancements in the television industry, there is a connection between them that stems from societal norms that call for women to be sexual and beautiful, but also innocent and pure. This contradiction opens the gateway to the sexualization of young girls, and therefore, enables predatory behaviors toward women.From a social and feminist perspective, this analysis emphasizes the need for modern-day American society to acknowledge the contradictory, societal expectations for women that may be related to the predatory and violent behaviors exhibited by men towards women.

Tran, Lindsey

Institution: *TN - Middle Tennessee State University*

Discipline: Physics/Astronomy

Author/Contributors:
Lindsey Tran,
Daniel Erenso

Abstract Name: **Creation of electro-magnetic assisted "Star-like" formation from cancer cells using laser trapping technology**

Cancer is the second leading cause of death among humans worldwide. Although radiation therapy is the most effective course of treatment for patients, it still causes harmful and long-lasting damage to their bodies, ruining their quality of life. The initial purpose of this study was to minimize radiation damage caused by cancer treatment using laser-trapping (LT) technology. However, amidst experimentation, two scientific phenomena were discovered: "Dark-space" and "Star-like" formations. Both discoveries were observed to have power absorption and conservation abilities, which can be utilized in the world's constant technological advancements. Thus, the purpose of this study was expanded into 3 phases: Single-cell ionization, "Dark-space" formation, and "Star-like" formation. Phase 1 used an infrared laser trap to find the minimal radiation required to ionize a BT20 cancer cell. A 3:1 mixture solution of BT20 cancer cells and micron-size magnetic beads was instilled onto a depression slide and used to conduct measurements for over four years. Further, on to Phase 2, a "Dark-space" forms when the magnetic beads and cells interact with the laser trap that acts as an energy storage capacitor and rapidly expands as more and more radiation is absorbed. This expansion causes all surrounding matter to accelerate towards the dark region, yet it can never penetrate the space. Upon explosion, the energy of the "Dark-space" causes the surrounding matter to form into a plasma. Leading into Phase 3, a "Star-like" illumination forms once the plasma interacts with the laser trap. This interaction causes an emission of intense blackbody radiation that grows and becomes more robust as more energy is absorbed. Overall, applications of this study may provide improvements in cancer treatment, microchip technology, and solar energy harvesting.

Tran, Mary

Institution: *NE - University of Nebraska-Lincoln*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Mary Tran,
Chun-Hsing Ho

Abstract Name: **Evaluation of transportation inequality in rural Nebraska**

This paper is to address one of the important issues related to transportation inequity in rural areas in the state of Nebraska. Transit equity implies that there will be a link between affordable public transportation and employment opportunities. Residents in rural communities face broader transit and transportation inequities that are more difficult to address than residents living in urban communities. Data collected and analyzed from the US Census Annual Estimates in 2020 indicated that out of 500 cities in Nebraska, only 17 have appropriate access to public transportation, whereas 483 cities received less or non. To better serve those under-resourced communities, this paper offers needed shifts for addressing these issues, including potential solutions that make transportation mobility and network more equitable distribution to rural areas. A multi-method research strategy consisting of a qualitative research approach, a case study, and data from the National Household Travel Survey is used to explore transportation behaviors among disabled adults in rural and urban areas and four regions across the state of Nebraska. These findings emphasize the relative importance of various modes of transportation for participating in activities and the continued reliance on personal vehicles, either as a driver or a passenger, particularly among rural disabled residents. It is anticipated that the results from the research will be helpful in reducing the transportation inequity gap between rural and urban areas and providing suggestions to public agencies for decision-making in the development of sustainable transportation infrastructure initiatives across the state of Nebraska.

Tran, Nathan

Institution: ***CO - Regis University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sara Kuzbiel,
Katelyn Schad,
Nathan Tran,
Stacy Chamberlin

Abstract Name: Stabilizing the Dimer of Non-Structural Protein 9 in SARS-CoV-2

SARS-CoV-2 is an RNA+ virus that is directly translated by the host cell to produce non-structural proteins (Nsp 1-16) essential to the replication of viral RNA. One interesting non-structural protein, Nsp 9, contains an unusual OB-greek key motif known in other viruses to bind single stranded RNA working with the helicase to allow efficient replication.Additionally, this protein is thought to dimerize for efficient RNA binding; however, the specific mechanism of dimerization and the interaction between this dimer protein and a cognate RNA sequence are currently unknown. To better understand the requirements for dimer Nsp 9-RNA binding, we have made a cysteine mutant to covalently stabilize this dimer. Tryptophan fluorescent studies have been developed to determine differences in binding affinities of both RNA and DNA sequences to help identify requirements of complex formation between Nsp 9 and, an as of yet, unidentified cognate RNA. Initial studies indicate binding of an RNA pseudoknot structure could aid in sequestering Nsp 9 to untranslated regions of the viral RNA.

Trausch, Megan

Institution: ***OH - University of Findlay***

Discipline: English/Linguistics

Author/Contributors:
Megan Trausch

Abstract Name: A Hijacker's Demise: An Account of the D.B. Cooper Mystery

D.B. Cooper's 1971 commercial plane hijacking is a significant unsolved case in American history. This project provides answers to the research question: What happened to D.B Cooper, the unidentified plane hijacker of November 24, 1971? To answer this question, this paper reviews the literature written on D.B. Cooper and analyzes the available primary sources written about his disappearance. The sources gathered consist of publications by the Federal Bureau of Investigation (FBI) and other newspaper articles reporting on the incident. There are only two possible answers to the research question; D.B. Cooper died or D.B Cooper is still alive. The analysis of the primary source material throughout this paper leads to the conclusion that D.B. Cooper did not successfully escape the plane hijacking, ultimately causing his demise.

Treaster, Rees

Institution: *IL - Quincy University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Brayden Luckhaupt,
Rees Treaster,
Malik Hardmon

Abstract Name: Enhancing Healthcare with Real-Time Body Gesture Recognition: The DroneX Solution

Due to the increasing popularity of drones in mainstream entertainment and business sectors and the limitation of controllers, we realized the need for hands-free control and expansion of user-defined commands that hardwired controllers cannot support for drones. This project uses the DJI Tello drone to recognize different commands through body gestures. The DroneX should distinguish between a series of body gestures and return the desired commands to the Drone. We have implemented the MediaPipe tool by using its APIs to currently recognize eight gestures; stop, take/up, land, forward, backward, left, right, and flip. We also used OpenCV and its APIs to display the image on a separate device. The DJI Tello drone is used as the environment for deploying the DroneX software. The Tello is connected to a separate device via Wi-Fi limited to 100 meters. It has a camera that is 5 megapixels (2592 x 1936), has an 82.6-degree field of view, and is HD 720 p. We are aware that DJI RyzeTM has a drone called the DJI Spark that uses hand gestures to issue commands. We are using body gestures to have a better range than hand recognition. Social media platform Snapchat also had a drone called Pixy that would take a selfie of the user, but Snapchat discontinued the efforts to develop it in August 2022. Pixy would just take a picture and return it to the user's hand. Currently, the DroneX project has some limitations, such as working in low-light flight conditions, harsh environment flight, and in an area of multiple detected objects. In future work, we plan to overcome the mentioned limitations, detect gestures at big distances, and include larger body gestures in our dataset.

Triem, Joseph

Institution: *MT - Montana State University - Bozeman*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Joseph Triem,
Ava Graham,
Trevor Zahl,
Royce Wilkinson,
Blake Wiedenheft

Abstract Name: Screening Type III CRISPR Complexes for Enhanced Signal Amplification

Type-III CRISPR-Cas systems are programable RNA-guided detection systems that recognize RNA targets by complementary base pairing. Target RNA recognition activates a polymerase domain that selectively polymerizes adenosine triphosphate (ATP) into cyclic oligomers of adenosine (cOA). In bacteria, target detection-dependent polymerization of ATP amplifies the cOA alarm signal during an infection, and we recently repurposed these systems for sequence-specific detection of SARS-CoV-2. However, the sensitivity of these new CRISPR-based diagnostics is still insufficient for clinical applications. To improve sensitivity, we are screening type III complexes from Thermus thermophilus, Streptococcus thermophilus, and Enterococcus italicus to determine the rate of cOA synthesis (kcat). Complexes that synthesize cOAs more rapidly will be incorporated into the diagnostic to increase overall sensitivity.

Trilling, Magdalana

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Macy McCormick *Olivia Ganser* *Magdalana Trilling,*
Rebecca Jarzynski

Abstract Name: Preparing Communication Disorders and Sciences Students to Collaborate with Interpreters: The Power of Interdisciplinary Experiences

Nearly 25% of children in the United States currently speak a language other than English at home (Ann Casey Foundation, 2022). Despite the clear and compelling need for competent and linguistically responsive assessment and intervention practices, practicing speech language pathologists (SLPs) frequently report feeling underprepared to accurately work with interpreters when serving dual language learners (DLLs) (Guiberson; Atkins, 2012; Santhanam; Parveen, 2018). However, collaborative training experiences can provide SLPs and interpreters with the opportunity to converse about their roles, discuss ethical problems with interpretation, and merge their shared thoughts to ensure best practices for clients (Zhang, 2020). The purpose of this research project was to understand the ways in which an interdisciplinary simulated training experience and interdisciplinary immersion screening experience compare and contrast in relation to communication sciences and disorders (CSD) and interpreter students' feelings of preparedness for working collaboratively within their future professions. Researchers gathered data through reading, analyzing, and then qualitatively coding CSD and interpreter student summaries written post- simulated experience and post-screening. Student reflections included overall perceptions of the experience as well as perceptions regarding the ways in which the experiences influenced their feelings of preparedness. Student reflections and interviews were analyzed using inductive coding procedures as described by Merriam and Tisdell (2016). Codes, categories, and subcategories were revised and operationally defined during the coding process, until a final set of codes, categories, and subcategories was developed. Findings highlight the similarities and differences in CSD and interpreter perceptions, as well as the similarities and differences in student perceptions of an interdisciplinary simulated experience as compared to an interdisciplinary immersion screening experience. Findings will inform future pre professional and professional training experiences designed to increase SLP confidence and competence for working with interpreters and to increase the quality of interpreter and SLP practices for DLLs.

Trippler, Kennedy

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Megan Bowe,
Katelyn Surine,
Brittany Ottman,
Mekenna Thomas,
Kennedy Trippler,
Nick Noskowiak

Abstract Name: Minority Status and Mental Health

Discriminatory behaviors live throughout society today and all generations of the past. How do these behaviors impact groups with minority status? The aim of this study is to research how chronic stress expereinced by people with minortity status impact mental health. There will be multiple angles applied to this study. The first area of interest is how social media either contributes to or gives a community for discriminatory behaviors or does social media allow for an outlet for those with minority status to build support and community. The second area of interest is how does stress related to choronic discrimination exposure contribute to the mental health of individuals with minority status. Previous research has shown disparities in mental health, substance use, and other factors related to mental health among groups with minority status when compared to the same age group of majority status individuals. This study will identify factors associated with positive and negative mental helath development across multiple minority status groups through a survey implemented and analyzed in the spring semester of 2023.

Trittelwitz, Luke

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Luke Trittelwitz,
Jessie Bielak,
Reece Lisowski,
Andrew Mehus,
Madilyn Tokarski

Abstract Name: **Yearly Survival and Growth Rates of Propagated Fatmuckets (Lampsilis siliquoidea) in Central Wisconsin**

Freshwater mussels are key members of riverine ecosystems and are crucial for improving water quality. Mussels serve as valuable indicator species and suffer from many environmental disturbances, but despite their importance, large gaps remain in knowledge of freshwater mussels in Wisconsin. We measured the survival and growth of mussels exposed to ambient conditions in two streams in Central Wisconsin. Both selected streams included those that support diverse mussel assemblies. On October 29th, 2021, we received 120 Fat Muckets (Lampsilis siliquoidea) from the Genoa Fish Hatchery, measured, then released them into suitable areas on the Mill Creek; the Plover River Near Stevens Point, WI. Before release, mussels at the Mill Creek site averaged 1.853 cm in length, 1.03 cm in width, and 0.52 cm in thickness. At the Plover River site, mussels averaged 1.859 cm in length, 1.068 cm in width, and 0.546 cm in thickness. We utilized silos to encompass the 1.5-year-old mussels. Each site has 1 silo, containing 15 individuals per silo. Our objective is to determine seasonal survivorship and growth rates throughout our year-long study. Experimentation at these sites will provide an indication to determine which areas are suitable for future reintroductions. We expect 1) Mussel growth and survival will be significantly reduced in the winter months, compared to the summer months. 2) Mussel growth and survival will be significantly different between the two sites. These sites were measured monthly beginning April 21st and lastly October 21st, 2022. This is part of an ongoing study through the University of Wisconsin – Stevens Point's student chapter of The Wildlife Society.

Trocke, Erin

Institution: *WI - University of Wisconsin-Platteville*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Gokul Gopalakrishnan,
Evan Steeno,
Erin Trocke,
Marc Aruguete

Abstract Name: **Fabrication of MEMS Filters for Applications in Rapid Prototyping and Biotechnology**

Effective techniques for the separation and spatial manipulation of shaped microscopic particles are vital to applications in fields ranging from biotechnology to manufacturing. For instance, shape-specific separation can be used to isolate microbes and biomolecules. Printers used for rapid prototyping from composite materials could benefit from a device that constrains the orientation of microscale filler materials such as metals, glass or carbon fibers.The separation and alignment of shaped particles is generally challenging, since nonspherical particles can freely rotate and present different faces during motion. In this presentation, we describe the fabrication of lithographically patterned and anisotropically etched microscale pores in a single crystal silicon substrate, that are designed to overcome these difficulties. We present data on the engineering limitations and outcomes of this fabrication process and preliminary results from flow testing. These precision-engineering pathways show promise for both the shape-based separation of non-spherical particles aswell as in controlling their spatial orientations.

Trocke, Jayden Trocke

Institution: *WI - University of Wisconsin-Platteville*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alex Hornung,
Garrett Sprouse,
Jayden Trocke

Abstract Name: **Simulation of the Shear Flow Dynamics of Suspended Microscale Particles**

Understanding the shear flow dynamics and wall interactions of non-spherical particles suspended in fluid media is important in a number of fields, from large scale phenomena like coastal erosion to mesoscopic and microscale applications such as additive manufacturing with fiber-reinforced composite filaments and shape-based separation of particles and biologicals.In particular,focusing on the geometric orientations of high-aspect ratio fiber-like particles suspended in low- and high-viscosity fluids transported through precision engineered pores with radially asymmetric geometries. This includes using a combination of analytical methods and numerical simulations with computational fluid dynamics solvers ANSYS Fluent and STAR CCM+ to evaluate the ability of customized microscale pores with tapered sidewalls to orient and align fibers suspended in fluid media. We believe these results to also provide valuable insights into nanoscale applications such as the wafer-scale printing of aligned carbon nanotubes for microelectronic circuits.

Troeller, Phoebe

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: **Public Health**

Author/Contributors:
Phoebe Troeller *Keith Dookeran* *Marina Feffer*
Kyla Quigley *Chariya Christmon* *Janine Khan*

Abstract Name: **Disparity in Neonatal Abstinence Syndrome by Race/Ethnicity, Socioeconomic Status, and Geography**

Recent updates to the HCUP-KID database offers an opportunity to examine the relationship between key sociodemographic-factors and U.S. national disparities in neonatal abstinence syndrome (NAS). We used 2016 and 2019 cycles of cross-sectional data from HCUP-KID national all-payer pediatric inpatient-care database to estimate NAS prevalence (ICD-10 code P96.1) in newborns ≥35 weeks gestational-age, excluding iatrogenic-cases (ICD-10 code P96.2). Multivariable generalized-linear-models with predictive-margins were used to produce race/ethnicity-specific stratified-estimates for select sociodemographic-factors, reported as risk-differences (RD) with 95% confidence-intervals (CI). Final models were adjusted for sex, payer-type, ecologic income-level, and hospital size, type, and region. The overall weighted-sample prevalence of NAS was 1.14% (n=7721/677721) and did not differ over cycles. In fully-specified models, NAS prevalence among Whites was 1.67% (95% CI: 1.54, 1.80) higher than Blacks and 1.72% (95% CI: 1.59, 1.86) higher than Hispanics; and NAS among Blacks was 0.14% higher than Hispanics (95%CI: 0.04, 0.25). NAS prevalence was highest among Whites on Medicaid (RD: 4.2%; 95% CI: 3.97, 4.48) compared to Whites on private-insurance (RD: 0.4%; 95% CI: 0.34, 0.46), and Blacks (RD: 0.82%; 95% CI: 0.71, 0.92; RD: 0.14%; 95% CI: 0.08, 0.421), or Hispanics, with either payer-type (RD: 0.66%; 95% CI: 0.57, 0.75; RD: 0.10%; 95% CI: 0.04, 0.17) respectively. NAS prevalence was higher among Whites in the lowest income-quartile (RD: 2.6%; 95% CI: 2.36, 2.88) compared with Blacks (RD: 0.55%; 95% CI: 0.45, 0.65) and Hispanics (RD: 0.48%; 95% CI: 0.37, 0.59) in the same quartile, and all subgroups in other quartiles. NAS prevalence was higher among Whites in the Northeast (RD: 2.47%; 95% CI: 2.14, 2.79) compared to Blacks (RD: 0.57%; 95% CI: 0.35, 0.78) and Hispanics (RD: 0.33%; 95% CI: 0.19, 0.48). Compared with Blacks and Hispanics, Whites on Medicaid, in the lowest income-quartile, and the Northeast U.S. have the highest NAS prevalence.

Trost, Elysse

Institution: *IA - Iowa State University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Elysse L. Trost,
Dirk C. Winkelman,
Kenna Stenback,
Basil J. Nikolau,
Marna D. Yandeau-Nelson

Abstract Name: **Functional Characterization of Genes in the Plant Fatty Acid Elongation Pathway using Synthetic Biology Approaches in Yeast**

The plant cuticle is a hydrophobic barrier that is the first line of defense between aerial organs and the external environment.The cuticular waxes protect against both biological and non-biological stressors and are composed of fatty acids and their derivatives. The very long chain fatty acyl-CoAs that are precursors for cuticular wax biosynthesis are synthesized by the fatty acid elongation pathway in maize. The maize Ketoacyl-CoA Synthetase (Kcs) and Glossy2 (Gl2) gene families are two of many enzyme families that are necessary for the elongation of the VLCFA precursors. Based on previous research, specific genes within these two families may interact either directly or indirectly to affect the elongation of fatty acids: Kcs5 and/or Kcs6 with Glossy2 and/or Glossy2-like. Moreover, the function of the Glossy2 gene family in maize is still not defined. To study the relationship between the Kcs and Glossy2 gene families, we took a heterologous systems approach by expressing and characterizing different combinations of these maize genes within yeast. VLCFAs were profiled from the different Kcs-Gl2 engineered strains grown to stationary phase and gene function inferred from VLCFA accumulation patterns.These results will be presented and discussed.

Trout, Adam

Institution: *FL - Florida Atlantic University*

Discipline: **Economics**

Author/Contributors:
Adam Trout

Abstract Name: **Is the Student Loan Forgiveness Plan Fair?**

Recently, President Joe Biden signed an executive order forgiving student loan debt for millions of eligible students. People are eligible for between $10,000 and $20,000 based on the types of federal loans they took. This executive order has created significant debate among the population and the major news networks on the topic of fairness. This survey had the goal of discovering the publics opinion of fairness on this executive order. My hypothesis was that Democrats would support the bill more than Republicans and independents. To test my hypothesis, I wrote a survey on Survey Monkey with the data being collected through Amazon Mturk. My survey consisted of 197 completes from Americans aged 18 and older. The results revealed that for the question of fairness for students who have paid off their debt, Republicans and Independents disagree more with fairness than Democrats. Republicans disagreed 12.2% and Independents disagreed 24.2% compared to Democrats disagreeing with 0.9%. This is statistically significant at the one percent level. Since the executive order is stuck in the courts, this is valuable to all lawmakers because it shows which Americans are more likely to support this executive order and other similar orders.

Trudell, Kate

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Kate Trudell,
Tom Sather

Abstract Name: Perceived Benefits of an Aphasia Creative Arts Installation Using a Project-Based Intervention Framework

This study explores the value, as perceived by individuals with aphasia and their care partners, of an aphasia creative arts installation at a local coffee shop. Members of a local aphasia group, utilizing a project-based intervention framework, developed individual creative arts pieces that were displayed publicly during a two-month art installation at a local coffee shop. Additionally, narrative descriptions were provided by each individual and linked via QR code next to each art piece displayed. Nominal group technique (NGT) was used to explore the perceived value of the creative arts project using project-based intervention to support ongoing community participation and aphasia awareness. Following NGT procedures, multiple iterations of semi-structured interviews were completed with both individuals with aphasia and care partners. Interviews were framed around four primary domains: successes, barriers, impacts on the community, and impact on self/partner with aphasia.People with aphasia identified primary themes of success, which included aphasia awareness, team effort, and location, while a success identified by care partners was honoring their partner with aphasia publicly. The primary barrier was perceived to be uncertainty according to both people with aphasia and care partners. People with aphasia reported the primary impact on the community to be the outreach to the public and friends, while care partners reported aphasia awareness to be the primary impact on the community. The project-based intervention framework utilized in this aphasia group collaboration resulted in identity enhancement, aphasia awareness, and meaningful participation in a collaborative fashion. The utility of the project-based intervention framework and applications of themes derived from interviews will be discussed relative to future individual and group aphasia projects.

Truong, Kyle

Institution: ***MD - University of Maryland College Park***

Discipline: Business

Author/Contributors:
Aarushi Malhotra *Joanna Ihm* *Philip Mathew*
Soham Nagaokar *Rachel Antony* *Benjamin Bral*
Seth Gleason *Johnny Rajala* *Daniel Zhu*
Kyle Truong

Abstract Name: Detecting Bias in Intelligent Autonomous Hiring Systems

This project analyzed if artificial intelligence (AI) hiring systems demonstrate prestige bias, and how that bias may be mitigated. We chose to look at prestige bias since the quality of a candidate's education will naturally be reflected in their skills and experience; a school's reputation should not additionally be factored into a hiring decision. Of note, this project analyzed prestige bias against Historically Black Colleges and Universities (HBCUs). The majority of students attending HBCUs are people of color who are already marginalized members of society. We examined how hiring site Indeed utilizes AI to list candidate resumes by relevance and measured the relationship between a candidate's resume ranking and the university they attended. We expect to find a negative association between HBCU status and ranking, which is stronger than the association between ranking and other confounding variables such as experience type, degree level, field of study, etc. Subsequently, we will develop our own AI system, utilizing hiring decision data that we collected from Indeed, to observe if it will present a similar bias. If so, then we will apply debiasing techniques to our model to create a new AI hiring system that is not biased against HBCU applicants. With businesses considering AI as a tool for hiring, companies must understand that AI hiring systems can perpetuate the same biases found in human hiring on a larger scale.

Trzcinski, Jacob

Institution: ***PA - Westminster College***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Jacob Trzcinski

Abstract Name: Generating Novel Chiplet Designs Utilizing the Wave-Function Collapse Algorithm in Python

Computer algorithms can be used to autonomously generate novel computer chiplet designs. Chiplet designs are very popular in common computers and include designs such as x86 and x32. The uses for these chips range from smart thermostats to super-computers. The goal of this research is to use the Wave-Function Collapse Algorithm—an algorithm that analyzes a provided image then produces a similar output image—to produce a new chiplet design by autonomously placing chip features, such as an Arithmetic Logic Unit, and Control Unit, on a two-dimensional die. After providing the program a sample image, loosely based on current designs, it will produce a new image with features from the original sample. These new images are then assessed by various metrics like distance between units, and physical size of the units, to determine the usability of a chiplet if it were fabricated according to the output design. Further planned research includes employing machine learning to optimize chiplets for performance and more efficient chiplet synthesis for processes like extreme ultraviolet lithography, and wet etching.

Trzebiatowski, Jenna

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Hailey Koehler,
Jenna Trzebiatowski

Abstract Name: Mechanical Properties of Organic-Inorganic Composite Films: Comparing the Impacts of Flexible vs. Rigid Organic Components

A series of organic-inorganic composite films composed of alkanethiol-capped gold nanoparticles and dithiol crosslinking molecules were assembled upon the air-water interface within a Langmuir trough. The mechanical properties of films containing conformationally flexible alkanedithiols were compared to those containing rigid bi- and terphenyl dithiols via measurement of minimum collapse pressures. The results of this study address the specific role of nanoscale materials components,further enabling the rational design of nanoarchitectures with specific chemical, physical, and mechanical properties.

Trzebiatowski, Jenna

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Jenna Trzebiatowski,
Isaac Swenson

Abstract Name: Spectroscopic Investigation of the Lowest Triplet State of Alpha-Pyrone

Molecular triplet states are chemical species that have two unpaired electrons. Triplet states are formed through the process of electronic excitation, in which energy from light or other sources promotes an electron from one molecular orbital to a higher one. The unpairing of spins via triplet excitation imparts significant chemical reactivity to triplet states, because these species behave as diradicals.In this project, we are using laser spectroscopy to investigate the lowest-lying triplet state of the alpha-pyrone molecule. Pyrone isomers, having formula C4H4O2, are conjugated carbonyl compounds containinga six-membered ring, with an ether linkage inside the ring. In alpha-pyrone, the ether oxygen is in position 2 of the ring with respect to the carbonyl group. Previously, we studied gamma-pyrone, in which the ether oxygen is in position 4. We learned how the vibrational frequencies in the lowest triplet state of gamma-pyrone differ from the frequencies in the ground state.In our current work on alpha-pyrone, we use a tunable dye laser that produces light in the 375-400 nm range to promote a carbonyl lone-pair electron into the lowest π^* molecular orbital.This process creates the lowest triplet state, denoted T1(n,π^*). By using the cavity ringdown (CRD) spectroscopic technique,we can detect laser absorptions that excite various modes of vibrational motion in the T1(n,π^*) state. Theinformation we obtain using CRD spectroscopy is analogous to that availablefrom aninfrared spectrum of the ground state.Thetriplet-state vibrational frequencies measuredin this projectare allowing us to understand how the conjugation and ring strain in the alpha isomer differ from these properties in the gamma isomer. This information will help researchers in the field of synthetic photochemistry better understand reactivity of the pyrones.

Tsanos, Theofania

Institution: ***NC - Winston-Salem State University***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Julia Holgado,
Muan Mohamed,
Theofania Tsanos

Abstract Name: Disparities Affecting the Knowledge of Female Pelvic Floor Disorders

Pelvic floor dysfunctions (PFDs) are the most common problems faced by women post-partum, however, only a few have access to and awareness of physical therapy (PT). Due to its prevalence, PFD is now considered a public health issue, including urinary incontinence, fecal bowel incontinence, pain during intercourse, and pelvic organ prolapse. White women and women of color had no significant difference in experiencing PFDs, and yet women of color had statistically less knowledge of PFD conditions. African Americans and other women of color are also less likely than white women to recognize childbirth as a risk factor for urinary incontinence and pelvic organ prolapse. Research demonstrates that women with a higher level of education have greater proficiency of PFDs compared to those with a lower level of education. Socioeconomic factors play a major role in the knowledge of PFDs because a higher annual income can provide better access to education and medical care. The aim of this study is to assess women's knowledge of PFDs and raise awareness about the importance of pelvic PT and its benefits for women after childbirth in order to prevent PFDs. Given that there is a lack of research in this area, we aim to bridge the existing gaps regarding the roles that age, racial, and socioeconomic disparities play in the need for education about PFDs, as we believe that this knowledge will help lower PFD cases with the help of pelvic physical therapy. The subjects will be 30 females between the ages of 20 and 40, recruited from college campuses, community centers, and healthcare providers. Data will be collected via a survey consisting of open- and close-ended questions to ascertain women's knowledge and awareness of post-partum PFDs and available therapy options. The survey will be developed in consultation with two licensed pelvic physical therapists.

Tucker, Devinee

Institution: *PA - Susquehanna University*

Discipline: **Biology**

Author/Contributors:
Elton VanNoy,
Devinee Tucker

Abstract Name: **Potential Anti-Cancer Effects of Chromene Thiazole Thioether Derivatives**

Previous studies have shown that chromene-based compounds exhibit anti-cancer properties as a result of their ability to function as microtubule destabilizing agents. Thiazole and thioether also function as notable pharmacophores with anti-cancer properties. Using a library of in-house synthesized chromene thiazole thioether compounds, we hypothesize that these compounds will have enhanced anti-cancer abilities compared to the individual components and will function by affecting microtubule stability. The derivatives vary by a heterocyclic ring structure, and we aim to examine how different structures affect reactivity with tubulin. Primary molecular docking studies completed with AutoDock Vina demonstrated promising binding affinities between the synthesized compounds and the colchicine binding site of tubulin. The destabilizing agent, nocodazole, has a binding affinity of -.6.4 kcal/mol whilst the synthesized benzimidazole derivative has a greater binding affinity of -8.4 kcal/mol. All compounds achieved a binding affinity between -7.0 and -8.4 kcal/mol indicating promising reactivity with tubulin. To analyze the effect of the compounds on microtubule dynamics, we are now conducting in-vitro tubulin polymerization assays to observe their impact on the rates of polymerization relative to paclitaxel (a stabilizing agent) and nocodazole (a destabilizing agent). We will also be testing the compounds on a human cancer cell line (A375) to examine their anti-mitotic effects.

Tucker, Ryleigh

Institution: *OK - University of Central Oklahoma*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Shelby Rubino,
Ryleigh Tucker

Abstract Name: **Suicide Prevention Among Oklahoma?s Student Veterans**

In 2020, the Governor of Oklahoma issued a statewide challenge to reduce and eliminate suicide among Oklahoma's service members, Veterans, and their families. As a result of this challenge, in 2022 a survey concerning suicidal ideation among Oklahoma's student Veterans was conducted. Multiple agencies were involved in the development of the survey, including the University of Central Oklahoma, and the Oklahoma Department of Veterans Affairs. The survey contained items concerning demographics, social support, military affiliation, and academic status. Additionally, to measure depression severity, the ten items from the PHQ-9 survey (Kroenke, Spitzer,; Williams, 2001) were included. To prepare for distribution, campus Veterans offices were contacted regarding their current outreach practices. The survey was then distributed through Veterans offices at campuses across Oklahoma, including career-tech centers, community colleges, primarily undergraduate institutions, public research universities, and private institutions. In all, 105 student Veterans responded. Chi-square tests and t-tests were performed to identify factors related to suicidal ideation and major depression. Following this, a multiple regression model for predicting the overall PHQ-9 score was developed. These results will be disseminated to Oklahoma higher education institutions to assist with their outreach efforts and to bring awareness to deficiencies in their current practices.

Turk, Jackson

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Junior Tochimani,
Alyssa Bierman,
Jacob Grabinski,
Shalyin Jochum,
Aspen Mercer,
Jackson Turk

Abstract Name: Social Media and Self-esteem

Social media, what did we do before it existed? Were we better off before or are we now? The debates around social media use are endless. There are strong viewpoints on both sides. Some believe it is literally the demise of human society, contributing to the delinquency of minors and providing negativeinformation that molds the minds of the young. Others believe it is entertainment and provides no harm to society and has no impact to the changing world we live in. Still others are cautiously in the middle. While social media has been around for some time now, we still know very little about the potential long-term impact. The population most influenced is the young. This research study explores the association between age of beginning use of soical media and the impact on various aspects of development.The key areas of interest are mental health, self-esteem, sexualization, achievement and addiction. Correlational analysis will be completed in the spring semester of 2023.

Turman, Erin

Institution: ***MN - University of Minnesota - Crookston***

Discipline: Chemistry/Materials Science

Author/Contributors:
Erin Turman,
Venugopal Mukku

Abstract Name: Secondary Metabolites from Moroccan Lavandula Mairei

Lavandula maireiis a wild plant native to the southern mountainous region of Morocco. Morocco regularly harvests native and wild plants for their medicinal properties, but this leaves the native plants at risk of being over-harvesting and leading to the plant's extinction. Early research has shown that essential oils from L. maireiexhibit antibacterial activity against some Gram-positive and Gram-negative pathogens as well as multi-drug resistant pathogens which affect those that work and are treated in the hospital. In addition, research done on L. mairei essential oils showed high levels of carvacrol which is known to be antibacterial and can be used as a food preservative. Other than the research on L. mairei essential oil, no other work has been done with the plant. After receivingL. maireiextract (which was extracted with alcohol), HPLC analysis was performed to separate out potentially active compounds from the extract. This was performed to separate the constituents and to investigate which constituent(s) has/have biological activity. Five compounds were isolated and their structure elucidation using spectroscopic data (NMR and Mass) will be reported.

Tzintzun, Santiago

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Santiago Tzintzun *Wang Rong* *Elizabeth Glogowski*

Abstract Name: **Characterization of Structure-Property Relationships of Stimuli-responsive Copolymers**

This research focuses on the characterization of structure-property relationships of stimuli-responsive copolymers for applications as dispersants in architectural coatings such as paints, primers, and stains. Stimuli-responsive polymers can dramatically change their physical properties in response to small changes in their environment. An important change in properties can be seen at the cloud point, the temperature where the polymer becomes insoluble in aqueous solution and indicates self-assembly or aggregation of the polymers. Copolymers with varying compositions were synthesized using Activator Regenerated by Electron Transfer Atom Transfer Radical Polymerization (ARGET ATRP), a synthesis technique that allows for narrow control of the molecular weight of the copolymers. Nuclear Magnetic Resonance Spectroscopy (NMR) and Gel Permeation Chromatography (GPC) were used to confirm the polymer structure and molecular weight dispersity. Polymer solubility and self-assembly were measured using Ultraviolet-Visible Spectroscopy (UV-Vis) and Dynamic Light Scattering (DLS) as a function of temperature, pH, ionic strength, polymer composition, and polymer concentration. These copolymers dramatically change solubility as a function of temperature and pH because of the tertiary amine. At low pH and low temperature, hydrogen bonding with water dominates behavior, so the polymers are water soluble. As pH or temperature is increased, the intramolecular forces control behavior, so the polymers become insoluble in water. The copolymer composition will shift at what specific temperature the solubility changes. Understanding structure-property relationships of these stimuli-responsive copolymers allows for optimization in applications. Stimuli-responsive polymers with these unique properties could be used as dispersing agents as a novel alternative to current commercial agents.

Ubeda, Rosemary

Institution: *FL - Miami Dade College*

Discipline: Chemistry/Materials Science

Author/Contributors:
Thalia Sautie,
Rosemary Ubeda

Abstract Name: **Zwitterionic Bergman-Triggered Cascade Polymerization: An Usual Multistep Plateau Cascade Leading to Transition Metal-Graphene Nanoribbon (TM-GNR) Hybrid Semiconductors Using Boron-Metal Couple**

With a accelerated growth in artificial intelligence (AI), designing high-speed and low power semiconducting material is of utmost importance. The present study provides a theoretical basis to access novel transition metal-graphene nanoribbon (TM-GNR) hybrid semiconductors whose DFT-computed band gaps were much narrower than the commonly used pentacene. A systematic investigation into the bandgaps and the methods to access these novel materials will be discussed. Additionally, the role of unusual hydrogen bonds and plateau reactions in successful cascade polymerization will be discussed.

Unrath, Andrew

Institution: ***IL - McHenry County College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Drew Unrath,
Maria-Magdalena Farc

Abstract Name: The Relationship Between Self-Monitoring, LGBTQ+ Identity, and Social Media Use

This study analyzed the relationship between self-monitoring, LGBTQ+ identity, and social media use patterns. Self-monitoring has been shown to influence friendship formation and activity patterns in face-to-face interactions. This research extends previous work by analyzing the interaction between self-monitoring characteristics and social media use in an inclusive way. The purpose of the present study was to explore the ways self-monitoring and LGBTQ+ identity predict social media use on different platforms. A total of 100 participants (66 cisgender heterosexuals, 34 belonging to the LGBTQ+ community) completed surveys assessing self-monitoring, frequency of social media use (both active and passive), number of platforms being used, and emotional states after using social media. Results indicate that high self-monitors are more likely to follow a larger number of people on TikTok and Instagram and people who identify as LGBTQ+ are more likely to follow a larger number of people on TikTok. Also, compared to cisgender heterosexual participants, LGBTQ+ participants post information about a greater number of topics on social media and report a greater number of emotions after using social media. Specifically, women who identify as LGBTQ+ report more positive feelings after using social media than men do. Moreover, self-monitoring total score and component scores as well as LGBTQ+ identity significantly predict the total number of accounts participants have on social media, so that high self-monitors and people who identify as LGBTQ+ have more social media accounts. These findings support the value of exploring self-monitoring and social media use with a focus on gender/sexual diversity.

Upson, Hannah

Institution: ***VA - Virginia Tech***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Hannah Jane Upson

Abstract Name: When the Right to Access (Life) Becomes a Burden: Accessibility to Public Health for Disabled People in Virginia during the COVID-19 Pandemic

This study examines two key accessibility issues for disabled people in Virginia during the COVID-19 pandemic: the accessibility of information about COVID-19, and access to vaccinations. Has disabled peoples' legal right to health care services and information been upheld in the time of the COVID-19 pandemic in Virginia?This study evaluates the accessibility of five web pages created by the Virginia Department of Health, and five web pages created by health districts in Virginia about COVID-19 guidelines and services. The accessibility of websites was determined under the standards of Section 508, a federal law "that requires agencies to provide individuals with disabilities equal access to electronic information and data comparable to those who do not have disabilities, unless an undue burden would be imposed on the agency." The level of compliance to these guidelines was measured by metrics provided by the Trusted Tester Program housed in the Department of Homeland Security. This study used both an accessibility testing tool and manual testing to determine the level of accessibility for each website.The findings are as follows: (1) Levels of compliance were low (2) Disabled people were overlooked when planning Covid-19 responses (3) They were denied equal access to information necessary for proper care and survival. 4.) Because Section 508 describes responsibility for accessibility as a "burden on agencies" rather than as "a human right," access is not prioritized in times of crisis. This case, I argue, reaffirms the importance of a disability justice framework, because it goes beyond mere compliance.

Urbanski, Allison

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Nursing/Health Science

Author/Contributors:
Allison Urbanski,
Jenna Hinden

Abstract Name: WRAPping Our Heads Around the Impact of Advertisements Near Schools

The aim of this research project is to generate evidence surrounding the type and amount of advertisements displayed by alcohol/tobacco retailerswithin a one-mile radius of nine high schools in Eau Claire County. This project specifically centers on surveying the advertisements of alcohol, nicotine-containing products, and processed foods on the property exteriors(including gas pumps, bollards, entry doors, exterior facing windows, etc.). Studies showthat adolescents are exposed to alcohol advertisements on a daily basis which impacts consumption and drinking habits, as well as the vulnerable developing brain. The U.S. Surgeon General reported that the use of e-cigarettes is on the rise among adolescents and continues to be a public health concern. For this population, close proximity between schools and retailers who sell and advertise junk foods is largely associated with higher consumption rates of these same foods. Based on concerns from Eau Claire County high school students and administrators, amodified survey from the Wisconsin Retail Assessment Project (WRAP) will be utilized to identify the content and quantity of advertisements near local schools. The project outcome involves the creation and dissemination of an original, interactive, and evidence-informed presentation created to inform public health and city officials who then have the opportunity to use the data to affect signage. The results have yet to be determined, but it is predicted that a majority of retailers near Eau Claire County high schools advertise alcohol,processed foods, and nicotine-containing products. This in turn increases accessibility, affordability, and acceptance of further product usage in adolescents.

Uribe, Sofia

Institution: ***CA - California State University - Long Beach***

Discipline: Psychology/Neuroscience

Author/Contributors:
Sofia Uribe,
William Pedersen

Abstract Name: Feeling left out and angry: The impact of social exclusion, impulsivity, social distress, and pain on anger

Social exclusion (when an individual is ostracized or ignored by others) can increase social distress and social pain in addition to anger and aggression. Furthermore, impulsivity (a predisposition to unplanned reactions to internal or external stimuli without regard to the negative consequences) has also been linked to negative affective and behavioral outcomes. The current study is the first to assess if social distress and social pain mediate the relationship between impulsivity and state anger in the context of social exclusion. Participants (n = 105) engaged in an online social media task with a group of 6 fictitious participants and wrote a self-description that was ignored by all the other group members (viz. induction of social exclusion). Measures of social distress, social pain, and state anger were then collected. A serial mediation analysis revealed that social distress and social pain mediated the relationship between impulsivity and state anger, b = + 0.1589, 95% CI: [+0.0301, +0.3565]. Specifically, increased levels of impulsivity were associated with increased social distress (b = +0.8696, p = .0194) which led to increased social pain (b = +0.8846, .001) and this in turn was associated with increased state anger (b = +0.2065, p = .0014). Implications for the impact of social exclusion and impulsivity on social distress, social pain, and state anger in addition to other negative outcomes such as violence will be discussed.

Urrea, Katrina

Institution: *AZ - Northern Arizona University*

Discipline: **Biology**

Author/Contributors:
Alexanda Gibson *Jessica Guzzo* *Emily Luberto*
Meagan Owens *Katrina Urrea* *Megan Wilkinson*
Karen Haubensak

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After threemonths of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Ursu, Andrei

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Andrei Ursu *Rinny Singh*

Abstract Name: **Lead Telluride Nanoparticle based Radiation Detectors**

In the Advanced Nuclear Technology Lab, we focus on creating high resolution, ionizing radiation detectors using lead-telluride (PbTe) nanoparticles. These nanoparticle based detectors can be superior to current single-crystalline detectors because they facilitate low-cost solution-based manufacturing and, from a physics perspective, enable size-dependent control of the band-gap and suppression of thermal-loss processes. Whether nanostructured or homogeneous, semiconductors convert neutrally charged particles into electrons and thereby into a useful signal to identify the type of interacting radiation. This approach offers a fast and cheap alternative to traditional methods which typically are characterized by very low yields and small detector volumes. Nanoparticles can have unique properties due to their high surface-area-to-volume ratio causing them to be highly reactive and able to exhibit unusual properties. We are developing the chemical process needed to create these semiconductors; however, as stated above, nanoparticles are highly reactive so slight deviations in the production of the semiconductor results in massive changes in viability as a radiation sensor. We are running numerous trials to see what factors are best for the semiconductor formation such as pH, functional ligand type, cleaning procedures and particle sizes. In terms of the ligand that functionalizes the nanoparticle, we are testing both thioglycolic acid (TGA) and mercaptosuccinic acid (MSA) as our bonding ligand with a hypothesis that the TGA will be a better bonding agent since it is much smaller and should allow for better loading on the surface of the semiconductor. While going through a vacuum filtration, the pH and nanoparticle sizes affect how it loads on the surface of an ANF. We have created PbTe-polymeric detectors from both PbTe-TGA and PbTe-MSA, but the PbTe-TGA devices exhibit higher loading and better detection performance while PbTe-MSA exhibits less nanoparticle-to-nanoparticle bonding and therefore more uniformity in the solid.

Uwajeh, Kene

Institution: *EGY - The American University in Cairo*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maya Shehata,
Mariam Alaa,
Dana Wasfy,
Kene Uwajeh

Abstract Name: **Conformity and Friendship Satisfaction Among University Students**

The rhetoric around one's role in a friendship or relationship is largely shaping up to promote a lack of conformity. Adolescents and young adults are now regularly told to "stand out" and perhaps that fitting in isn't always the best option. This, however, prompts the question of what role conformity plays in impacting friendship satisfaction. This paper explores whether there's a correlation between an individual's level of conformity and their level of friendship satisfaction. Gender and relationship status are explored as potential mediators in this relationship. The participants' level of conformity was measured using the Elevator experiment, where participants enter an elevator and find 4 other people facing the rear end of the elevator. Participants accordingly make one of three decisions, they either turn and face the rear end (conformity), continue standing the same way (non-conformity), or hesitate (mid-level conformity). Participants then completed a questionnaire that assesses their level of platonic friendship satisfaction across three scales. This process was completed 75 times by participants, with 25 students conforming, 25 not conforming, and 25 mid. Results of the Anova show that there is no significant correlation between conformity and friendship satisfaction; however, there was a significant correlation between gender and friendship satisfaction, which indicated that girls are overall more content with their friendships. This opens lots of areas for future research, as it can be worthwhile to explore some of the other factors that result in girls being more satisfied with their friendships at this specific age.

Vafaei Naeini, Zahra

Institution: *LA - Louisiana State University, Baton Rouge*

Discipline: Biology

Author/Contributors:
Zahra Vafaei Naeini,
Ruth Ndathe

Abstract Name: **Different Light Intensities Significantly Affect the Growth and Fucoxanthin Concentration of the Oleaginous Diatom Fistulifera solaris**

Biofuel production using algae is believed to have tremendous positive impacts on the environment and it seems a promising solution for global warming. However, growing algae on a large scale takes many resources and mass production of biofuels is not yet economically viable. In this study, an oleaginous diatom, Fistulifera solaris, was cultured in autotrophic conditions under four different light intensities for 14days to determine which conditions allowed for higher biomass and higher fucoxanthin concentration, a valuable photosynthetic pigment that is expensive and can make the process of biofuel production affordable. As a measure of abundance, absorbance values of diatoms in 750 nm wavelength (OD750) were obtained ondays 0, 7, and 14. Onday14, biomass and fucoxanthin concentration were measured. Statistical analyses revealed a significant change in growth of diatoms under the four treatments which can be explained by varying rates of reproduction of the diatoms grown under different light intensities. Specifically, the highest OD750 and biomass was found in medium-high light intensity while the highest fucoxanthin concentration was found in low light intensity. It is suggested that diatoms grown in low light intensity are ideal for increased fucoxanthin concentration due to the downregulation of a gene, which is responsible for encoding a fucoxanthin precursor, in exposure to high light intensities. Considering this data and findings from similar studies, it is suggested that mixotrophic conditions, which involve both autotrophic and heterotrophic conditions, may be better for growing F. solaris for biofuel production.

Vaillant, Madison

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: English/Linguistics

Author/Contributors:
Madison Vaillant

Abstract Name: **Judging Books By Their Covers: Diet Culture Rhetoric Within College Student Communities**

This research takes a qualitative and mixed methods approach to exploring diet culture rhetoric through a rhetorical analysis and a food medicalization lens. A rhetorical analysis of the front and back covers of twelve diet books was used to create a coding scheme to categorize the rhetoric. This was applied to ten semi-structured interviews of students on the University of Wisconsin-La Crosse campus. The rhetoric from these were compared to the rhetoric of the diet books to determine if there were similarities or differences, and furthermore, if a relationship existed between them. The research has shown that while a clear causation between the diet book rhetoric and the rhetoric of the students wasn't supported, they indicated connections to the larger world of diet rhetoric which included social media, television, and other media. They also indicated a connection to the rhetoric of food medicalization, which is used to frame food as treatment or a form of medication to solve problems in the body that may or may not be legitimate.

Vajipayajula, Dhruv

Institution: *PA - Temple University*

Discipline: Biology

Author/Contributors:
Dhruv Vajipayajula

Abstract Name: **Evaluation of Signaling Events by Activated Protein C Cleavage of Protease Activated Receptor 1 on Human Platelets.**

Activated Protein C (APC) regulates blood coagulation by cleaving cofactors in the coagulation cascade. Recent studies have shown that APC can cleave the Protease Activated Receptor(PAR1)on endothelial cells at a different site than thrombin does; this elicits cytoprotective effects and protection from endothelial dysfunction. While PAR1 is also expressed in human platelets, studies have shown that human platelets are not activated by APC. Here, we investigate differencesin APC/PAR1 mediated signaling in human platelets. A tethered peptide TR47 based on the cleavage site of PAR1 by APC has been designed and shown to cause similar effects as APC on endothelial cells. We investigated whether the tethered peptide causes platelet activation and triggers signaling events in human platelets. Platelet activation was traced through Born Aggregometry, and precipitated proteins were analyzed by Western blotting. SFLLRN, another tethered peptide mimicking the action of Thrombin on PAR1, was used asa control agonist, which caused human platelet aggregation, ADP secretion, and downstream signaling events such as ERK phosphorylation. We found that TR47 did not cause any platelet activation, nor wasERK phosphorylation observed. These preliminary results suggestthat other factors or pathways in endothelial cells might contribute to cytoprotective signaling events and mitigation of dysfunction. We anticipate finding evidence that TR47 might be working on other proteins to cause signaling events and protection from endothelial dysfunction.

Valdez, Maria

Institution: *TX - Laredo College*

Discipline: Biology

Author/Contributors:
Maria Valdez

Abstract Name: **Systematic Review: Canine Hip Dysplasia**

Canine hip dysplasia is an abnormality of the hip joints that occurs in most dog breeds. Hip joint abnormalities are anything from shaped deformity of the femoral head of the hip, undersized or oversized femoral head with the acetabulum, and any diseases that affect the hip decreasing the mobility of the dog. According to data gathered, the main factor that causes hip dysplasia in dogs is genetics. However, external factors like exercise, nutrition, dog breed, and growth rate also influence the susceptibility and rate of intensity in hip dysplasia of dogs. The systematic review was implemented to gather information about different dog breeds in relation to canine hip dysplasia. The data was gathered from scholarly databases using the search terms hip dysplasia in dogs; canine, and the word dog was interchanged with the name of the dog breed being researched. Based on previous literature review the top dog breeds most susceptible to hip dysplasia are English Bulldogs (55%), German Shepherd (50-55%), and Rottweilers (41%). The external causes for hip dysplasia in these dog breeds were weight, nutrition, and excessive breeding. Dogs that are least susceptible to having hip dysplasia are Borzois, Siberian Husky, and Doberman with a prevalence of 1.9%, 5.3%, and 6.1%, respectively. Data still needs to be gathered on why these dog breeds have a low chance of getting hip dysplasia compared to other breeds. This research is important because genetics plays a factor in hip dysplasia susceptibility but there are other factors that may increase or decrease the chance of getting hip dysplasia. If more dog owners knew more about their dog breed they would be able to put their dogs on a proper diet to lower the chances of getting hip dysplasia.
Keywords: Hip dysplasia, genetics, dog breeds, femoral head, acetabulum, systematic review

Valdez-Tello, Ana

Institution: *GA - Kennesaw State University*

Discipline: Architectural and Interior Design

Author/Contributors:
Ana Valdez-Tello

Abstract Name: **Dignify Dwellings: Habitat Structure for Displaced Communities**

Refugees are not a temporary state; many live their lives or grow in an environment that they do not call home. The immediate need for survival during a crisis uses light-deployable shelters that are not meant for long term conditions. Displaced communities are driven to live in camps where they experience an overwhelming and overcrowded environment. Their need for safety, privacy and dignity is imperative. For that reason, this research focuses on providing a dwelling taking into account three components; what makes a dwelling a home? How can we as designers empower a community? And through which tectonics can we provide feasible dwellings for refugees?As a precedent, Shigeru Ban's shelters use paper tubes, a flexible material that can be found anywhere using adaptable joinery. Using this concept of adaptability, this research aims to develop a flexible system using principles of scaffolding. Scaffolding is accessible, deployable and easy to transport. It can also be applied to different materials such as bamboo, metal, or wood. The aim is to design a module/ system with a mechanism that refugees can assemble without any prior training. The module would consist of a lightweight frame, an enclosing membrane, the earthwork, and the hearth.Besides the tectonics, this research seeks to elevate shelters into a home. The feeling of home is subjective based on people's culture, feelings, tastes, etc. Nonetheless they all share one thing; free-will. Yona Friedman's theory "La Ville Spatiale" empowers the inhabitants to decide by themselves. This approach allows refugees to have authority of their own lives by being able to choose and embrace their homes. My research aims to design a module/system with variations, by exploring joinery and kit-of-parts building techniques. The design strategy is to assemble these modules to become a home and then a community.

Valencia, Valeria

Institution: ***TX - The University of Texas at El Paso***

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Blancas *Jose Luis Herrera* *Manuel Morales*
Valeria Valencia *Daniel Flores*

Abstract Name: Efficacy of Social and Physical Support for Cancer Patients

Cancer is the second leading cause of death in the United States. In addition, cancer treatments provoke harsh side effects that demand extra strength from the patient. Cancer causes lifestyle modifications that can be detrimental on the patients' health; however, healthy habits can potentially increase the chances of a positive prognosis. Additionally, physical, and social support has proven to help patients in their fight against cancer. Since the lack of physical and social activity in patients with cancer has been shown to correlate with mental and cognitive decline, ultimately reducing quality of life, the purpose of this study is to examine the relationship between physical activity and quality of life in patients with cancer And increase their overall quality of life. This project included eight female participants that are currently struggling with cancer, or the cancer is in remission. The program consisted of group discussions, fine motor movements, and various physical activities twice a week for three weeks. Using pre/post intervention questionnaires and a dependent t-test, the significance of social and physical activities amongst the participants were analyzed. The dependent t-test showed a significant difference (t=-3.729, p=0.007) in the overall quality of life between pre and post program. These preliminary results imply that implementing a support group such as Healthy Habits that includes the use of physical and social activity, improves the overall quality of life of patients with cancer. In conclusion, the program created an additional outlet for individuals with cancer to find a relatable support group that can aid with daily struggles. Further analyses in a larger sample and with longer duration will provide stronger evidence about the relationship between physical activity and quality of life in patients with cancer.

Valero, Katherine

Institution: ***TX - San Jacinto College***

Discipline: Education

Author/Contributors:
Martha Jimenez *Katherine Valero* *Maya Vazquez,*
Carmen Rodriguez *Myrim Cepeda* *Laura Alvarez*

Abstract Name: Education System Vs. Undocumented Students

The American education system is made to provide students access to a bright future; however, for undocumented students that is not the case. The research below will show that the system has limited their ability to experience a system that those who are documented have access to. Due to this, undocumented students face issues related to their mental health, emotional well-being, lack of access to resources, racial injustice, and effects on household. The lack of solutions has led to an unequal education system; however, there is nothing being done to come up with solutions. Although there are holes in education, teachers and those of higher power are not taking the time to understand all that these students face. Undocumented students are left to face these struggles on their own, ultimately setting them up for failure. While some students have the help of DACA,Deferred Action for Childhood Arrivals,they are still limited when receiving an education. Limitations should not exist when it comes to an education that will be their door to an unlimited future.Their fear of getting deported leads to unattended emotional and mental issues (Lad, 2013). Their fear of an incomplete household leads to an unfocused school career (Rangel, 2022). Their lack of resources leads to unreachable goals (Terriquez, 2015). The struggles of others' stereotypes lead to an unfair pathway to success (Lopez,2018). While many think there is only one pathway of education, that pathway comes with many obstacles for undocumented students. The education system has given undocumented students opposition, which is why we decided to bring light to this issue.

Van De Loo, Colin

Institution: ***WI - University of Wisconsin-Oshkosh***

Discipline: Biology

Author/Contributors:
Colin Van De Loo,
Dylan Stone,
Jessica Brandt

Abstract Name: Algae Growth in Relation to Biodiversity of Freshwater Systems in Northeastern Wisconsin

The focus of the study is to determine whether large-scale algae blooms in Wisconsin affect biodiversity in freshwater systems throughout the northeastern part of thestate. We will be focusing on a pond linked to the Fox River system in order to analyze and measure the, overall, biodiversity of the water system. The pond exhibits large algae blooms annually, typically starting to cover 2/3 of the pond surface by June. The study will focus on physical removal of algae using barley straw as a medium of decomposition:One of the products of its decomposition is hydrogen peroxide. Hydrogen peroxide is useful in destroying algae as H2O2 has a weak central bond and will form a hydroxyl radical when its bond breaks. This will target the cell wall of nearby organic compounds, such as the algae, and force the bond to break in order toreform with the radical, essentially killing the algae. The byproducts of this reaction are simply O2 and H2O (oxygen and water). There is no toxic residue left behind in the water. Seeing as the barley straw will be introduced bythe surface of the water, and the reaction will happen relatively quickly, it is unlikely that other organisms will be negatively affected by this process. Any reaction with other organisms such as plants or fish will only damage epithelial cells, however a smaller protist such as algae will be removed quite efficiently. Ostensibly, an increase in the overall health of specific microorganismsshould benefit macro-organismsfurther upthe food chain, as oxygen content increases throughout the freshwater system.

Van Dyke, Kara

Institution: ***IL - Trinity Christian College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Melissa Ballesteros *Jenna Goss* *Kara Van Dyke*

Abstract Name: Religious Counselors and Cultural Competence: When Beliefs Collide

Individuals with a fundamentalist religious orientation respond defensively to challenges against their religious beliefs(Abeyta; Blake, 2020). Individuals who are intrinsically religiously oriented are internally focused and help others based on their own values, whereas quest-oriented religious individuals are altruistic and act based on the values of those they help, (Batson 1976, Batson et al., 1989). Researchers aim to understand the relationship between orientations of religiosity and counselors' perceived multicultural competence with clients. In this exploratory mixed-methods study, 35 counseling students and alumni from a small midwestern religiously affiliated college completed a survey with open-ended questions and scales. The short answer questions ask about faith, experiences in clinical training, and counseling practice. Participants completed the 12 Item Quest Scale (Batson; Schoenrade, 1991), Revised Religious Orientation Scale (Gorsuch; McPherson, 1989), Multidimensional Cultural Humility Scale (Gonzalez et al., 2021), Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (Bidell, 2017), and Fundamentalism Scale (McFarland, 1989). Researchers discovered participants who score themselves as fundamentally oriented and see religion intrinsically, score highly in self-awareness. Participants who score highly in quest orientation score highly in competence to work with LGBTQ+ clients. The results were: significant positive correlations between intrinsic and fundamentalist (N=29, r= 0.646, 0.000), fundamentalist and self-awareness (N=29, r= 0.416, 0.25), quest and LGBT DOCSL (N=35, r= 0.384, 0.04), as well as significant negative correlations between fundamentalist and quest orientations (N=29, r= -0.595, 0.001). Qualitative responses indicated that counselors who wrestle with their religious beliefs are more willing to engage clients' values. Conversely, religiously certain counselors displayed more internal conflict and less confidence when helping clients with differing beliefs. These initial results support Abeyta and Blake's (2020) findings that those who are more fundamentalist and intrinsically oriented help others according to personal values.

Van Ginkel, Elise

Institution: ***WI - Madison Area Technical College***

Discipline: FAN Abstract

Author/Contributors:
Elizabeth Behr,
Kitrina Carlson,
Kristine Horabik,
Elise Van Ginkel

Abstract Name: Community College "CUREs" Engagement Deficits in Biology

Madison Area Technical College (Madison College) is a public technical and community college serving Madison, WI, and the twelve surrounding counties. Total enrollments exceeded 24,000 students in the 2021-22 academic year, with 42.2% of entering full-time students in Fall of 2020 continuing the following Fall. The Liberal Arts transfer program offers seven tailored pre-majors designed for transfer and satisfaction of the first two years of general studies at some institutions, with the University of Wisconsin-Madison serving as our largest transfer partner. A federally funded initiative to improve transfer student success through the establishment of Course-Embedded Undergraduate Research Experiences (CUREs) was established in majors' biology courses beginning in Fall 2018. This project has resulted in over 500 students participating in skills-focused CUREsin biology courses, and is expanding beyond the target courses to include related courses and programs. Prior to our CUREs implementation, only 18% of students completed abiology majors course series within two semesters. After CUREs implementation, 32% of students complete abiology majors course series within two semesters.Our panel will discuss this, and other outcomes of implementing CUREs in our biology courses, as well as the challenges and opportunities associated with implementing CUREs at a community college. Details about two of our collaborative CUREs initiatives, including ourwork implementing Tiny Earth and Sea Phages across three different biology courses will be highlighted.

Van Horn, Katherine

Institution: ***NY - Adelphi University***

Discipline: Psychology/Neuroscience

Author/Contributors:
Katherine M. Van Horn,
Dr. Jerold Gold

Abstract Name: How using TikTok around the clock is associated with symptoms of depression and loneliness among college aged students

Social media has become a huge part of daily life for adolescents all over the world. Previous studies have investigated social media platforms, such as Facebook and Instagram, and the effects they have on college aged students. However, there is a lack of research pertaining to the new social media platform, TikTok. This study will examine the influence of TikTok on college aged students, specifically examining depressive symptoms, levels of loneliness and differences of these associations among genders. This study will consist of two surveys, the CES-D scaleto evaluate depressive symptoms and the UCLA Loneliness Scale (Version 3) to evaluate levels of loneliness. Participants will also be asked to complete a demographic questionnaire. We anticipate that we will find a positive correlation between depressive symptoms and the usage of TikTok, and a positive association between the usage of TikTok and levels of loneliness. We anticipate that there will be different associations depending on gender; females and nonbinary individualsbeing more positively associated to depressive symptoms and levels of loneliness than males.Findings will be prevalent to increaseawareness of the negative effects social media can have on mental health, and to provide universities and college students with updated resources surrounding these issues.

Van Maanen, Jaed

Institution: *IL - Trinity Christian College*

Discipline: Biology

Author/Contributors:
Jaed Van Maanen,
Clayton Carlson

Abstract Name: **Phages are Friends: Viruses Helping to Reduce the Prevalence of Pathogens in Waterways**

Pathogenic bacteria can be found in almost all waterways. Contamination of urban waterway environments by these bacteria could serve as a potential reservoir for infection. Antibiotic resistance is becoming increasingly common among various species of known human pathogens, such as Klebsiella oxytoca and Providencia alcalifaciens, both of which are readily found in streams. This resistance limits the ability of medicine to effectively treat infections caused by these bacteria. One way in which antibiotic-resistant bacteria could be countered is through the use of bacteriophages. Bacteriophages tend to be extremely selective towards potential host cells. Human pathogens such as K. oxytoca and P. alcalifaciens, which can be found in local streams in the south suburbs of Chicago, could potentially be controlled by bacteriophage. Characterizing these bacteriophages will document the ways in which phages impact bacterial populations in local waterways with an emphasis on the prevalence of these two pathogenic bacteria. These effects will be researched in controlled freshwater environments. The host range of the bacteriophages will be evaluated by testing a specific bacteriophage against multiple species of gammaproteobacteria. Metagenomic analysis will be used to establish a connection between the presence of these bacteriophages and the overall microbial community in a given waterway. Bacteriophage could control the populations of pathogenic bacteria, both in the body through phage therapy and as a method of environmental cleanup through phage water treatment.

Van Orden, Gracie

Institution: *AL - Samford University*

Discipline: Philosophy/Religious Studies

Author/Contributors:
Gracie Van Orden

Abstract Name: **A Naturalistic Conception of Necessity**

This paper explores the issue of philosophical necessity, which sits at the root of modal logic and is a concept of interest for scholars from nearly every field of philosophy. The precise nature of necessity and the correct manner of application, however, are subject to debate. This research offers a new way of considering necessity from a more naturalistic perspective. I suggest a mapping of some of the traditional elements of necessity (composition, number, identity, etc.) to perceptual structures that correspond to demonstrated neuroscientific principles. Further development and verification of this perspective could offer meaningful insight into a number of puzzling questions in different fields of philosophy, mathematics, and more – including the Continuum Hypothesis and the problem of hypertolerance, among others.

Vance, Claire

Institution: *OK - University of Central Oklahoma*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Vance Claire *Emma Kidwell* *Alyssa McDowell*
Kevin Fink

Abstract Name: **How Gender Influences Gym Comfort Level in UCO Students, Staff and Faculty**

Background. Physical activity and its positive effect on overall health has been studied for decades. The goal of this research is to understand if there are observable differences in gym comfort level between self-identified genders. Methodology. Researchers curated an online questionnaire to measure one's comfort level in the gym. Data collection spanned over 6 weeks during the summer of 2022. The participants (N = 290) were 24.83% cis men, 65.52% cis women, and 9.66% transgender/gender-non-conforming (GNC). Results included students, staff and faculty with several cross-tabulations functions performed through SPSS 28.0 to examine differences between self-identified genders. Results. Notable results indicated that on a scale of 1-10 (lower scores indicating less comfort) the average result for cis men being 7.90, cis women at 5.21, and GNC individuals at 6.14. Percentages listed indicate a "yes" to if participants are comfortable in certain settings. 83.33% of cis men were comfortable participating in weight training activities in contrast to 35.79% of cis women and 53.57% for GNC individuals. When asked about cardiovascular training, 100.00% of cis men were comfortable as opposed to 76.32% cis women and 75.00% of GNC individuals. Those who were comfortable in the gym in terms of social setting were: 80.56% cis men, 37.37% cis women and 46.43% GNC. Discussion. Through data collected, researchers have been able to support the hypothesis that there are differences in gym comfort levels between gender identities. One limitation was confronting how to protect transgender or non-cis individuals because the response was very low. To do this, all non-cis people were grouped into one category (though researchers acknowledge that there are differences between trans/gender fluid/non-binary individuals). Possible outcomes to this result could be future improvement on making public and private gyms feel more open and comfortable to all genders.

Vandenberg, Kathrine

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kathrine Vandenberg *Maggie Guetschow* *Harry M Jol*
Andy Breckenridge *John B Swenson* *Paul Treuer*
Zachary Blackert *Lauren Claas*

Abstract Name: **Foredune Change on the Duluth-Superior Barrier System: A GPR Analysis**

The Duluth-Superior Barrier System (DSBS) in Duluth, MN and Superior, WI is one of the largest freshwater barrier systems in the world. The DSBS is home to fragile dune and wildlife ecosystems as well as Park Point neighborhood, a small, beach-facing community on DSBS. Wind erosion, increased lake levels, and human modification and activity have threatened the stability and future of the DSBS. Formed by wind, foredunes are ridges located parallel to the shore, anchored by vegetation. Foredunes help stabilize the shore and restrict the amount of sediment transported by wind and wave erosion. Without foredunes the risk of beach degradation and property loss on the DSBS significantly increases. Ground penetrating radar (GPR), a non-invasive method which creates near-surface cross section profiles of the ground below, making it an ideal method for examining the fragile dune features of the DSBS. GPR profiles were taken at various sites along Park Point to image the subsurface. These profiles provide information as to the processes that are impacting and changing the structure of the DSBS. Topographic data was collected with the Topcon RL-H4C laser level and GPR lines with the Sensors and Software pulse EKKO Pro 100 system at frequencies of 500MHz and 100MHz. The profiles were then processed and interpreted using EKKO_Project5 software. GPR lines taken at the northern end (8th St.) of the DSBS compared to lines collected near the middle (27th St.) of the DSBS show sediment loss on the northern end and sediment gain and dune growth at the middle location. The internal layering shown in the profiles and topographic data indicate possible degradation of the beach and foredunes at the northern site and progradation at the middle site. These changes are cause for concern because of the negative impact on residents and ecosystems.

Vander Weide, Blake

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Blake Vander Weide *Lucas Williams* *Sara Multhauf*
Sean Jordan

Abstract Name: EFFECTS OF ATYPICAL ANTIPSYCHOTICS IN RATS TRAINED TO DISCRIMINATE BETWEEN 22 AND 2 HOURS FOOD DEPRIVATION

In humans, weight gain is a side effect of atypical antipsychotics. In rats, clozapine increases eating, but reduces food-related, operant behaviors. Ziprasidone has smaller or no effects on eating in rats. Given the short half-life of clozapine in rats, we tested the effects of acutely administered clozapine and ziprasidone on the discriminative stimulus effects of food deprivation. Male, Sprague-Dawley rats were trained to discriminate between 22 and 2 hrs(hours) of food deprivation in a two-lever operant task. Under 22 hrs deprivation, left lever presses were reinforced by a 45 mg food pellet. Right lever presses were punished with 8 seconds of darkness. Under 2 hrs deprivation conditions, the contingencies were reversed. Training sessions lasted until 10 reinforcers were earned or 15 minutes elapsed. Training continued until rats emitted 80% or greater condition appropriate responding before the first reinforcer was earned for 8 out of 10 sessions. After acquiring the discrimination (M = 71, SEM = 6 sessions), subjects were food deprived for 2 or 22 hrs and injected subcutaneously with either clozapine (1.0-5.6 mg/kg), ziprasidone (0.32-1.0 mg/kg) or vehicle (1.0 ml/kg). For the 5 minute or 5 reinforcer test sessions, responses toward either lever were reinforced under the FR 15. Test trials were conducted every 15 min for 2 hrs. After test session, food intake was recorded for 1 hour. Clozapine and ziprasidone did not induce hunger-like responses under 2 hrs deprivation. After 22 hrs food deprivation, clozapine (1.0-5.6 mg/kg) significantly reduced hunger-like stimuli induced by 22 hr deprivation, whereas ziprasidone had no effect. Under both deprivation conditions, clozapine decreased food intake, but ziprasidone did not. These data indicate clozapine decreases feeding-related behaviors in rats. Atypical antipsychotic medications have different effects on food-related behaviors in rats and humans.

Vanderpas, Emily

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Nursing/Health Science

Author/Contributors:
Sebastian Torres *Nathan Hau* *Emily Vanderpas*
Samuel Petit *Tamim Rajjo* *Brandon Hidaka*

Abstract Name: Systematic Review and Meta-Analysis of how Heat and Antipyretics Affect the Course of Viral Upper Respiratory Infections in Adults

Viral upper respiratory infections (URIs) are common (i.e. the common cold) and have caused pandemics in 1918 and 2020. URIs are frequently treated with fever-blocking medications (antipyretics, like acetaminophen or ibuprofen), because they reduce symptoms. However, feveris an evolutionarily-conserved response to infection that mechanistically enhances various immune processes and experimentally improves survival in animals.Human studies exploring the effects of antipyretics on the course or outcome of viral URIs are inconsistent. We performed a systematic review to see how body temperature modulation affects the course of viral URIs in adults. Our primary outcome was time to symptom resolution. We used predefined search criteria of peer-reviewed articles on Embase, CINAHL, PubMed, and Cochrane databases. Inclusion criteria included observational studies and randomized controlled trials of viral URIs (e.g. no antibiotics) in adults that compared antipyretics or heat-based therapies (e.g. sauna or exercise) to a control group. Each article was reviewed by two independent reviewers with discrepancies resolved by a third party. We reviewed the abstract and title of 8886 articles and 140 full texts. Thirty-one studies met inclusion criteria for data extraction, of which 27 studies tested antipyretics and 3 tested heat-based therapies. There was significant heterogeneity among studies and only five studies reported the primary outcome. Meta-analysis of randomized controlled trials found no significant effect of antipyretic use on the average number of days it took to resolve an URI: -0.2 days (95% CI: -1.3 to 1.0) comparing antipyretic group versus control. In conclusion, we did not find evidence that antipyretics significantly prolong URIs overall. However, there may be other costs of blocking fever in URIs (e.g. complications like pneumonia) or antipyretics may prolong illness in specific types of infections or patients. Our inconclusive findings underscore the importance of further research into this common clinical scenario.

Vang, Cheng

Institution: *MN - St. Olaf College*

Discipline: Education

Author/Contributors:
Julia Cordes,
Manal Zaman,
Cheng Vang

Abstract Name: **Examining the St. Olaf First Year Experience**

In the fall of the 2022-2023 school year, St. Olaf College implemented a new First Year Experience (FYE) program. This new program consists of a revamped New Student Orientation (NSO), biweekly St. Olaf Orientation to Academics and Resources (SOAR) programs, and a seminar and writing course requirement, in an attempt to improve first year student satisfaction and success. In order to measure satisfaction and success, we compared data from NSO surveys, SOAR feedback surveys, the St. Olaf Learning Goals Questionnaire (LGQ), and the National Survey of Student Engagement (NSSE), in addition to general retention and student grade information, from this academic year, to similar data collected in previous years. We conducted exploratory data analyses which indicated clear correlations between student satisfaction and the timing of various portions of the FYE program. We then compared summary statistics and ran statistical tests to quantify and validate the trends in our data. These tests and observations indicated significant improvements in satisfaction and success that may be attributed to the new FYE program, such as improved performance on the LGQ in areas corresponding to required seminar content, and increased senses of belonging and connection among students following the week of Student Orientation. However, our work also highlights some aspects of the program with little to no impact on satisfaction or success, such as a majority of required biweekly SOAR sessions. Based on our results, recommendations will be made to St. Olaf College in order to revise and alter the FYE program for future incoming students.

Vang, Dejntxhee

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Dejntxhee Vang,
Brynn Richard,
RaiLynn Barnard

Abstract Name: **Mental Health In Athletes**

Athletes who are in higher education, collegiate athletes, are individuals who can struggle with addressing concerns related to their own mental health. Athletes can develop these ailments due to their environment: self-esteem stigmatization, sport-related injuries like concussions, influences from coaches, their view on social status, and even overtraining. This research examines the effectiveness in outreach programs and the outcomes from having a mental illness as well as correlational factor of stress. In an attempt to analyze athletes and their stressors, a survey was directed to those who participated in sports. The search for a correlation between coaches and causes of stress, questions were asked in a survey related to athlete stress and relationship with the coaching staff. The participants responded with 'probably yes' and 'probably not'. This showed that athletes were prone to facing stress at an average and above-average level. Stressors and rehabilitation in athletes are reported to have been extremely difficult. Results reported back that athletes definitely struggle to reach out to others. The group also searched for solution rates regarding outreach encouragement with peers and coaches. The report shows a vast majority responded that they weren't encouraged by others. The results showed that mental illness is potentially still a hidden topic across the sports world. This study aims to help support the research that collegiate athletes do experience mental ailments and that these ailments are caused by many factors: the responsibilities of training and overcoming challenges, the consequences of injuries, and advice from coaches or peers.

Vang, Havilah

Institution: ***WI - University of Wisconsin-Stevens Point***

Discipline: Music

Author/Contributors:
Chloe Carrillo,
Paterjah Lee,
Jesse Hanson,
Havilah Vang

Abstract Name: Borodin String Quartet No. 2

Borodin's Second String Quartet in D Major is a piece that requires advanced ensemble techniques, fine intonation work, and balanced melodies. It is an essential quartet piece within the string repertoire, and one which our group has grown from immensely while preparing.
The passing of melodies from cello to first violin and viola to second violin requires eye contact, breathing, and togetherness as a group. Borodin includes immediate tempo changes marked at the two animatos, as well as poco a poco dim. e rit at the end of the piece.
Beginning in the deceptively easy key of D Major, intonation inaccuracies are not easily hidden in this piece. Several moments require the performers to play in unison or octaves, and every chord must be carefully tuned. Compounding this, the piece changes keys several times during its development. The F#s in these keys are naturally dissonant and difficult to tune, especially in a group setting. Our quartet has spent hours together refining our intonation.
Throughout the piece, the first violin and cello converse with each other by trading the main melody. Later in the development section, the melody is passed around to the rest of the quartet. At the recapitulation, the cello hands the melody to the viola, requiring a strong sense of balance among the group. Because of this, our quartet has been working on balancing the melody and the accompaniment. The passing melodies require each member to use the same bow techniques and distribution, keeping everything uniform and beautifully phrased.
An influential work for any group, Borodin's second string quartet blends beautiful melodies and textures with flawless technique to create a timeless masterpiece.

VanGilder, Justin

Institution: ***IN - Indiana State University***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Justin Vangilder *Caleb Bowles* *Jeffery Buell*
Christian Herron *Isabella Leon* *Mackenzie Michael*
Lillian Moehring *Sophia Rashid* *Carter Ritzheimer*
Sandra Xique *Jennifer Latimer*

Abstract Name: Investigating the use of crayfish as environmental water quality sentinels for metal pollution in Indiana creeks

Ephemeral creeks and streams can be difficult to monitor and assess for water quality. Unfortunately, these same water systems can play a significant role in the input of metals and other pollutants into major waterways. Metals are often the result of nonpoint source or historic point source pollution that is no longer active, making assessment and exposure prevention difficult. An economical and reliable approach to determine water quality in these areas would be the use of reliable sentinel species that are endemic, easily identified, and respond in a quantifiably way to metals in the environment. Macroinvertebrate assemblages have been historically used to create comprehensive biotic indexes, but these indices can be complicated, seasonal, and difficult to assess without identification bias. For this project, crayfish samples, water samples, and sediment samples were collected in several creeks in Indiana representing a variety of environmental exposures. We hypothesized that because are omnivores and biotic engineers, their environmental interactions place them in a unique niche making them a reliable sentinel species. By testing and comparing the bioaccumulation of metals in crayfish tissue, water, and sediments to dominant species, average crayfish size, and population density, we can reliably predict creek health for metals. Our results determined thatFaxonius rusticus(rusty crayfish) were found in creeks with higher environmental metals. Also, crayfish cephalothorax measurements were smaller in higher metal environments. This data, along with metal bioaccumulation and biomagnification make crayfish an excellent sentinel for water quality in creeks.

Vanlandingham, Brennan

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Rose,
Brennan Vanlandingham,
Jillian West,
Rachel Baltuff,
Alex Kruschke,
Madison Lloyd

Abstract Name: Role of Motivation on Academic Success

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation in education is and how it impacts the academic success of college students. Factors that will be studied include intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation students vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions adressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

VanNatta, Kathryn

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication Science and Disorders

Author/Contributors:
Kathryn VanNatta,
Danae Anderson

Abstract Name: The role of response format in assessing the impact of increased video playback speed on comprehension

Background: The use of asynchronous video lectures as a means of content delivery has become a common feature of college courses. This is obviously true of online courses; however, the steady growth of asynchronous learning approaches in face-to-face classes has accelerated rapidly in response to the COVID-19 pandemic (Lee, 2020). This requires students to play a more active role in self-regulating their learning; however, this also allows students greater flexibility in choosing how they engage with lecture content. Consequently, students often watch online content at accelerated speeds. To date, research findings have been mixed as to whether this negatively impacts comprehension (Lang et al., 2020; Murphy et al., 2021). Performance discrepancies among studies may be partly explained by differences in the response formats used to assess comprehension (Collins et al., 2020). The current study aims to describe the role of response format (i.e., open-ended vs. multiple choice questions) in evaluating the impacts of increased media playback speed on comprehension.Methods: Thirty-five college-aged students watched three 15-minute researcher-created video lectures relating to cognitive psychology, each presented at a different playback speed (i.e., 1x, 1.5x, 2x). After watching each lecture, participants answered ten multiple-choice and ten open-ended questions to assess comprehension. Each question set had two versions with identical question stems but different response formats. Videos and question sets were counterbalanced across participants to reduce ordering effects. Analyses have not yet been completed. We expect higher scores on multiple-choice questions and slower playback speeds. We also expect the open-ended questions at 2x speed to be disproportionately harder than other conditions. The application of findings to pedagogy and student study strategies will be discussed.

VanNoy, Elton

Institution: ***PA - Susquehanna University***

Discipline: Biology

Author/Contributors:
Elton VanNoy,
Devinee Tucker

Abstract Name: Potential Anti-Cancer Effects of Chromene Thiazole Thioether Derivatives

Previous studies have shown that chromene-based compounds exhibit anti-cancer properties as a result of their ability to function as microtubule destabilizing agents. Thiazole and thioether also function as notable pharmacophores with anti-cancer properties. Using a library of in-house synthesized chromene thiazole thioether compounds, we hypothesize that these compounds will have enhanced anti-cancer abilities compared to the individual components and will function by affecting microtubule stability. The derivatives vary by a heterocyclic ring structure, and we aim to examine how different structures affect reactivity with tubulin. Primary molecular docking studies completed with AutoDock Vina demonstrated promising binding affinities between the synthesized compounds and the colchicine binding site of tubulin. The destabilizing agent, nocodazole, has a binding affinity of -.6.4 kcal/mol whilst the synthesized benzimidazole derivative has a greater binding affinity of -8.4 kcal/mol. All compounds achieved a binding affinity between -7.0 and -8.4 kcal/mol indicating promising reactivity with tubulin. To analyze the effect of the compounds on microtubule dynamics, we are now conducting in-vitro tubulin polymerization assays to observe their impact on the rates of polymerization relative to paclitaxel (a stabilizing agent) and nocodazole (a destabilizing agent). We will also be testing the compounds on a human cancer cell line (A375) to examine their anti-mitotic effects.

VanNoy, Maliyah

Institution: ***NC - Winston-Salem State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Maliyah Vannoy

Abstract Name: Potential Molecular Probes from Derivatives of Diphenylpyraline for Cannabinoid Receptor

Brain complexity regarding reward mechanisms has been studied for decades to uncover individual behavior related to motivation. Cannabinoid 1 receptors (CB1R) are located in the part of the psychoactive region of the brain and play a role in the reward system of psychostimulants. It has been shown that diphenylpyraline (DPP) and its analogs bind to CB1R. Hence, developing a CB1R selective probe could help provide more insights into brain reward mechanisms. To accomplish this, molecular modeling using Schrodinger software, synthesis, and biological testing using an iterative approach is being used to uncover the best compounds. Fortunately, the synthesis of most molecules is accomplished in under five steps depending on the method and optimization procedures are reported herein. The modeling leverages the protein data bank structure of CB1R. Molecular docking experiments performed on the CB1R structure (pdb 5TGZ) generated a five-point pharmacophore model for the binding of halogenated DPP analogs within the cannabinoid receptor. Calculated binding energies for the halogenated piperidyl analogs docked to CB1 agree with in vitro data, with fluorinated compounds having greater affinity than chlorinated compounds. This initial modeling informs a synthetic strategy where combinations of hydrophobicity and halogen additions on the phenyl rings may afford access to greater specificity and affinity for the respective protein targets. Optimization of these compounds using a pharmacophore approach could lead to greater specificity and affinity for the CB1 receptor. This rational approach to small molecule development has the potential to produce DPP analogs for use as novel molecular probes. In addition, toxicity studies conducted inform if the compound is suitable for animal models. Results from this iterative approach are reported herein.

Vanyo, Vincent

Institution: *IA - Iowa State University*

Discipline: Biology

Author/Contributors:
Vincent Vanyo *Paulo Fortes-Da-Silva* *Aubrey Mendonca*

Abstract Name: **Influence of Magnetic Fields Generated by Atmospheric Cold Plasma on Superoxide Dismutase Activity**

Cold plasma (CP) is a novel nonthermal processing technology that has recently shown great potential for use in the food industry to decontaminate foods and food contact surfaces. Generation of CP produces ionized gases with excited and reactive species, suggested to inactivate microbes due to irreparable membrane and/or genetic damage. Understanding of mechanisms of microbial inactivation by CP has proven complex, dependent on surface/microorganism type, gases present, and system setup. Specific CP systems, such as dielectric barrier discharge (DBD) generate atmospheric CP (ACP) at atmospheric pressure. Treatment using DBD ACP requires induction of a strong electromagnetic field. Previous research suggests that at certain magnitudes of magnetic field strength, superoxide dismutase (SOD) activity increases significantly within bacterial cells. The proposed mechanism of this increase in activity is thought to be enhancement of co-factor binding (e.g., Mn2+) to SOD. Considering DBD ACP (a) generates a magnetic field and (b) produces free radicals, reactive oxygen, and nitrogen species, the objective of this study is to characterize the influence of magnetic fields generated by ACP treatment on SOD activity and bacterial cell viability.Preliminary results indicate an increase in magnetic field strength decreases cell viability with a concomitant release of 260-nm absorbing material. However, differences in cell membrane leakage between magnetic field strength treatments were insignificant, even as cell viability decreased with increase in magnetic field strength.Further studies will characterize the relationship between magnetic field strength and cell viability at different ACP voltages. The activity ofSOD will also be measured in conjunction with increased magnetic field strengths to support cell viability results. The final results may indicate a simultaneous increase in SOD activity and cell viabilityat a specific magnitude of magnetic field strength.

Vargo, Bryna

Institution: *KY - University of Kentucky*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Lexi Nolletti *Darcy Adreon* *Bryna Vargo*
David Rodgers

Abstract Name: **Using Enzyme-Linked Immunosorbent Assays (ELISA) to Understand Insulin-Degrading Enzyme (IDE)-Phosphatidylinositol Phosphate (PIP) Lipid Interactions**

Insulin-degrading enzyme (IDE) has been linked to Alzheimer's Disease and Type II Diabetes due to its function in degrading insulin and the amyloid-beta peptide. IDE is, therefore, a potential therapeutic target for these diseases. This research aims to identify how IDE produced in the cell cytosol accesses its substrates, which are likely cleaved within the cellular endosomal system. It is hypothesized that some IDE localizes to endosomes by initially binding to phosphatidylinositol phosphate (PIP) lipids located in the endosome membranes. Computational docking studies suggested a site on IDE that might mediate an interaction with PIP lipid head groups. An enzyme-linked immunosorbent assay (ELISA) was used to evaluate whether mutations in this putative binding site disrupt interactions with artificial liposome membranes doped with PIP lipids. Results show that the mutations do affect PIP binding, with the variants IDER824A,H885A,R892A and IDEQ813A,N821A,H885A having reduced or no detectable interaction with liposomes bearing phosphatidylinositol 4,5-bisphosphate (PI(4,5)P2). This loss or reduction of PIP interaction supports the hypothesis that IDE interacts specifically with PIP head groups and that this interaction is mediated by the proposed binding site. Improved understanding of this mechanism could someday enable the development of therapeutics for AD and/or diabetes mellitus and explain why these diseases are frequent comorbidities. While studying IDE-PIP interactions it was also observed that PIP lipids can bind in the inner chamber of the clamshell-like IDE molecule. The lab previously obtained a crystal structure detailing this binding interaction. Future work will investigate the possibility of IDE having a second function as a lipid transfer protein, which the lab is beginning to explore using a liposome-based lipid transfer assay.

Vasquez, Stefania

Institution: *TX - Texas Woman's University*

Discipline: Psychology/Neuroscience

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Diane Mendoza,
Stefania Vasquez,
Sarina George,
Jacquelin Medrano,
Zane Lybrand,
Elisa Na

Abstract Name: **The effects of chronic mild stress on traumatic brain injury recovery**

Traumatic brain injury (TBI) is a debilitating condition which results from a concussive blow to the head and can produce epilepsy, mental health issues, and cognitive and behavioral impairments. The long-term impacts of TBI include brain edema, hypoxia, as well as damage to neural processes, the effects of which may compromise blood-brain barrier function and promote inflammatory responses. It is not clear if prolonged exposure to stress exacerbates symptoms associated with TBI thus the current experiment addresses the impact of chronic mild stress (CMS) on anxiety-like and depressive-like behaviors in a mouse model of TBI. The current study also assesses the combined effect of CMS and TBI on gliosis, the process through which glial cells respond to central nervous system damage. Using S100β staining, we quantified the extent of gliosis in the cortex and hippocampus of mice exposed to CMS, TBI or a combined treatment of both CMS and TBI.

Vaughan, Mel

Institution: *OK - University of Central Oklahoma*

Discipline: FAN Abstract

Author/Contributors:
Melville Vaughan

Abstract Name: **Engage Students in a Lab class with a Research Collaborator**

Here we present a model of engaging undergraduate students in a laboratory course-based biomedical research experience. Students learn mammalian culturing skills and how to monitor cell behavior using assays that can also generate preliminary research data. Most of the research has involved testing chemicals or extracts that might have therapeutic purposes. The students finish the class with skills they can use to get an entry-level or part-time position in a biological research facility, or they may consider changing their career plans. Numerous students continued to seek out research opportunities having learned that undergraduates can indeed conduct research. Because the research is course-based, most of the material costs for the researcher are related to the variable being tested, such as chemicals purchased for this unique experience. Our experience with this model has been encouraging, however there are challenges including buy-in from collaborators, difficulty in quickly producing results, the time required to manage the model, and collecting publishable data. This model could be effectively employed to test the behavior of genetically-altered cells.

Vazquez, ERICK

Institution: ***CA - San Jose State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Erick Vazquez *Shreyas Ravada* *Sohail Zaidi*

Abstract Name: Improving the Strength of 3D Printed Material by Inducing Low Frequency Vibrations

3D printing is a cost-effective option compared to other manufacturing methods but the printed parts from conventional materials (PLA+,PETG,ABS) often do not exhibit great tensile strength. The limitations come from the amount of the material and the fill factors used. Traditional methods to increase tensile strength include applying greater infill factors and thicker sample features but these methods may result in greater printing times/cost. To overcome this limitation, work at San Jose State university is inducing low frequency (5-10Hz) vibrations during the printing. For this purpose, a vibration motor (ERM/MTR/9000RPM-1.3V) was directly attached to the nozzle of the printer (Tronxy/X5SA). A special holder was used to hold the motor to attach it to the printer head to induce vibrations during the printing. For the overall dimensions of the specimen, ASTM-D638-Type-1 standard was adopted that gave the printed samples a thickness of about 7 mm. Different printing conditions included the variation of the fill factor (20%,60%,100%) with and without vibration. The printed samples were examined against the porosity and a fluid displacement method was adopted. Experiments show that induced vibrations were able to lower the porosity by 10 to 15% for identical fill factors. Initially samples were sent to Applied Technical Services (Gorgia) and the tensile strength for all printed samples (100% fill factor) with and without induced vibration was measured. The testing results indicate that for our 3D samples, induced vibrations did increase the tensile strength from 26.2 to 30.7MPa (~17% increase) for the corresponding applied loads of 4.1kN to 5.15kN respectively. The corresponding increase in the maximum stress was about 15.7% for 60% fill factor printed parts. New results from an inhouse testing machine at SJSU are being collected and analyzed. Final presentation will include full discussion on the impact of induced vibrations for various sample materials.

Vazquez, Maya

Institution: ***TX - San Jacinto College***

Discipline: Education

Author/Contributors:
Martha Jimenez *Katherine Valero* *Maya Vazquez,*
Carmen Rodriguez *Myrim Cepeda* *Laura Alvarez*

Abstract Name: Education System Vs. Undocumented Students

The American education system is made to provide students access to a bright future; however, for undocumented students that is not the case. The research below will show that the system has limited their ability to experience a system that those who are documented have access to. Due to this, undocumented students face issues related to their mental health, emotional well-being, lack of access to resources, racial injustice, and effects on household. The lack of solutions has led to an unequal education system; however, there is nothing being done to come up with solutions. Although there are holes in education, teachers and those of higher power are not taking the time to understand all that these students face. Undocumented students are left to face these struggles on their own, ultimately setting them up for failure. While some students have the help of DACA,Deferred Action for Childhood Arrivals,they are still limited when receiving an education. Limitations should not exist when it comes to an education that will be their door to an unlimited future.Their fear of getting deported leads to unattended emotional and mental issues (Lad, 2013). Their fear of an incomplete household leads to an unfocused school career (Rangel, 2022). Their lack of resources leads to unreachable goals (Terriquez, 2015). The struggles of others' stereotypes lead to an unfair pathway to success (Lopez,2018). While many think there is only one pathway of education, that pathway comes with many obstacles for undocumented students. The education system has given undocumented students opposition, which is why we decided to bring light to this issue.

Vázquez, Edwin

Institution: ***PRI - University of Puerto Rico***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Edwin O. Vázquez

Abstract Name: 3D Solid State Lithium-ion Battery Simulation

Currently, one of the most popular technologies for the development of a new generation of batteries is solid-state lithium batteries. One of the challenges with researching these batteries is that it is expensive and time-consuming to conduct research with physical materials. For this reason, computer simulations are employed to carry out these studies, but many of the current simulations are limited to models in one dimension (1D) and two-dimensions (2D). In this research, we utilized AutoCAD design software and battery design module to creating a simulation of a 3D solid-state lithium-ion battery on COMSOL Multiphysics. COMSOL is a modular software which is utilized to be able to perform diverse types of simulations.We use the Introduction to Battery Design Module model representation from COMSOL as a guide that contains the instructions for reproducing a 2D lithium-ion battery model, and were able to develop a representation with the same dimensions in AutoCAD but with added three-dimensionality (3D). Once the 3D model of the battery was designed, and assuming a single ion conducting interface, we combined the AutoCAD import module and implemented the 3D structure on COMSOL. The single-ion conducting interface is employed to theoretically simulate a solid electrolyte, which makes our electrolyte behave similarly to such system. Since COMSOL incorporates a library with several materials, one can easily simulate across various compositions. Such simulation can be used to investigate a diverse list of materials when implemented in the solid-state battery and thus be able to develop improved physical experiments with the materials that can produce optimum results.

Vazquez Jr, Ivan

Institution: ***TX - Laredo College***

Discipline: Nursing/Health Science

Author/Contributors:
Ivan Vazquez Jr

Abstract Name: Modern Medicine Vs. Traditional Medicine: Systematic review a Covid-19 analysis

SARS-CoV-2 (Covid-19) is a respiratory virus that fluctuates in severity depending on the physical state of a patient. Symptoms that may arise due to Covid may range from a mild cough, light fever, to organ failure. Modern medicine is separated from traditional medicine in the sense that the use of evidence, research, and testing is used consistently for the development of treatments for different illnesses and in this case Covid. Traditional medicine is a form of ancient medicine that has been passed down for centuries with the focus of mentality, physicality, and spirit always being the front runner. The purpose of this research is to compare the efficiency of both modern and traditional practices and how they compare in treating Covid. A systematic review was performed by extracting information from numerous articles comparing the different forms of medicine used to treat or reduce symptoms of Covid. Using modern medicine alone to treat covid showed to be effective however based on the data from clinical trials recovery rate and improvement rate of symptoms took longer when treated with modern medicine alone.Modern medicine is used to treat the virus itself while the side effects are still potent in patients who go the modern route for treatment. In traditional medicine the body as a whole is the main focus in treatment meaning the symptoms are what's targeted with traditional medicines. Based on the literature review it is concluded that the use of both traditional and modern medicine is the most effective for treating Covid as whole (the virus and the symptoms). Since the coronavirus is known for mutating at a fast rate, the information from these clinical trials is useful in demonstrating how the use of modern and traditional medicine is necessary to treat a virus like Covid.

Vega, Dylan

Institution: *CA - California State University - Channel Islands*

Discipline: Psychology/Neuroscience

Author/Contributors:
John Duran *Dylan Vega* *Kimmy Kee-Rose Ph.D.*

Abstract Name: **Behind the Scenes of Dark Triad Traits: A Study of Neurocognition and Emotional Processing**

The Dark Triad consists of personality traits of Machiavellianism, narcissism, andpsychopathy. These traits have been found to be negatively correlated with empathy.Machiavellianism and psychopathy traits have also been demonstrated to be associated withpoorer self-control, whereas narcissism and psychopathy traits have been linked to impulsivity. However, still little is known about the relationships between Dark Triad traits and other aspectsof neurocognitive processes. This ongoing study examines a broad scope of neurocognitive processes (i.e., self-control, inhibition, impulsivity) and emotional processing (i.e., emotionalawareness, and empathy) to determine specific predictors of Machiavellianism, narcissism, andpsychopathy traits in university students Data are currently available on 53 university students. Participants' personality traitswere assessed using the Short Dark Triad questionnaire. Neurocognitive functioning wasmeasured using the Tangney Self-Control Scale, Stop-It Inhibition Test, and The BalloonAnalogue Risk Task (BART). In addition, participants' emotional awareness was assessed usingthe Toronto Alexithymia Scale, whereas empathy was measured using the Empathy Quotient. For the interim analyses, traits of Machiavellianism were regressed on the five neurocognitive predictors (self-control, inhibition, impulsivity, emotional awareness, andempathy), using a simultaneous multiple regression procedure. The regression analyses revealedthat among the predictors, response inhibition (Beta = -0.001; t = -1.975, p = .05), emotional awareness (Beta = -0.011; t = -2.113, p = .040), and empathy (Beta = -0.026; t= -4.603, p = .0001) were significant determinants of Machiavellianism traits, whereas only empathy (Beta = -0.025; t = -2.785, p = .008) was the strongest determinant of psychopathy traits. However, none of the neurocognitive processes were significant predictors of traits of narcissism. Preliminary findings from this study could potentially expand our understandingthe specific roles of neurocognitive functioning in individuals with the Dark Triad traits.

Vega Martinez, Emma

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Emma Vega Martinez

Abstract Name: **Analysis of the Effect of Temperature on Red Light Responses in Arabidopsis thaliana**

Plant responses to red (R) and far-red (FR) light are mediated by the phytochrome (phy) pathway. Many details of this pathway are unknown, including how it interacts with other environmental signals. Work by our lab and others has shown that two genes called Light-Response BTB 1 and 2 (LRB1 and LRB2) regulate the phy pathway in the plant Arabidopsis thaliana by encoding proteins that induce phy degradation. Plants containing mutations within both genes (lrb1/lrb2 mutants) display hypersensitivity to R because of increased phy levels. Our lab has conducted genetic screens to identify lines ("enhancer mutants") with mutations that increase the lrb1 lrb2 R hypersensitivity. The enhancer mutations in the lines thus far characterized are located in the phyB gene, which encodes the phy that is the primary mediator of R responses in Arabidopsis. Recent work by other groups has shown that phys also act as temperature sensors, as temperature affects the rate at which the phys convert between their inactive and R-promoted active forms. Given their role in modulating phy levels, the LRB genes may also mediate temperature responses. Furthermore, our phyB mutations might alter temperature sensing. We are investigating this by comparing the effects of different temperatures on R responses in lrb1 lrb2, enhancer mutant, and wild-type plants. The lines have been grown under red light at 26°C (warm) and 22°C (room) temperatures under "short-day" conditions (8 hours of light and 16 hours of darkness). Hypocotyl length in seedlings was measured and compared, as this length is a sensitive and quantitative measure of light response. These experiments are ongoing and our results will be presented.

Velasquez, Iadara

Institution: *NM - University of New Mexico - Valencia Campus*

Discipline: **Biology**

Author/Contributors:
Iadara Velasquez *Tammi R. Duncan*

Abstract Name: **Determining the Community Dynamics of Siderophore-producing Bacterial Cultures from Carlsbad Caverns National Park (CCNP) Caves, Carlsbad, New Mexico**

Siderophores are produced by microorganisms to acquire essential ferric iron. Siderophores are crucial for microbial survival, but the function of siderophores for subsurface cave microorganisms have not been extensively studied. Due to the essential function of siderophores, microbial siderophore-producers have been suggested as helpers in a microbial community that have unculturable bacterial members. We are interested in understanding the community dynamics of mixed cave cultures (more than one type of bacteria per culture) that previously showed siderophore-strong and -weak production. We hypothesize that mixed cave cultures contain a siderophore-producer helper that aids the growth of an otherwise unculturable culture. Cave cultures were isolated from ferromanganese depositslocated in Spider Caveand Lechuguilla Cavefrom Carlsbad Caverns National Park (CCNP). Siderophore-producing cultures were grown at 20°C on three types of sterile agar plates and used to determine the colony morphologies, gram status, and to complete 16S rRNA gene sequencing. The majority of both groups, siderophore-strong and -weak cave cultures showed that the morphologies had a cream, translucent, and smooth appearance, with only one culture named 1-3, that had a yellow morphology. Using Gram stain, 60% of the siderophore-strong and -weak cave cultures demonstrated that they were mixed with at least two different bacteria and 40% had one bacterium. 16S rRNA gene sequencing showed that three of five siderophore-strong cultures were mixed with two or three different phyla. Three of five siderophore-weak cultures were shown to be mixed with two different phyla. Interestingly, two common phyla member pairs,Bacteroidetes/Beta-ProteobacteriaandBacteroidetes-/Alpha-proteobacteriawere shown in both siderophore-strong and -weak, with at least one of the members to be an uncultured bacterium clone. Overall, the siderophore-producing cave cultures revealed microbial-pairs of phyla that may provide insights to how cave microorganisms survive in an oligotrophic environment.

Velazquez, Emma

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Social Work**

Author/Contributors:
Julieta Murillo,
Emma Velazquez

Abstract Name: **An Analysis of Youth in an Upward Bound Program**

This research project focused on a strength-based assessment for youth entering the Upward Bound program. The Upward Bound program is a program at UW-Eau Claire that is federally funded and dedicated to the preparation for, admission to, and successful completion of a college degree. This program applies to first-generation and/or low-income high school students. The research collection focused on identifying assets in the students' lives and the strengths they possess, rather than analyzing the hardships they face and skills they may lack. The reason for this positive approach is that it has been found in past Upward Bound programs to better cultivate concrete change. This prompts students to first acknowledge and celebrate the networks they already have built around them. In order to further understand their environments a mixed-method approach was used. The qualitative data was collected through interviews, in which the questions focused on the participant's school experience, neighborhoods, and what their typical day at home would look like. In addition, the participants created ecomaps, timelines of important life events, and genograms. This process allowed for a connection to be built between the researcher and the participant. As for the quantitative data, the participants were given a Strengths and Difficulties Questionnaire (SDQ) that focused on their emotional well-being. Through this research, it was shown that COVID-19 has negatively impacted youth and their environments. The SDQ total of 2022 has shown an increase in conduct problems, peer problems, hyperactivity, and prosocial skills in comparison to 2019. As for the qualitative analysis, key themes were safety issues (drug use/ fighting) at school as well as racism/inclusivity.

Velazquez, Yaileen

Institution: *IL - Northern Illinois University*

Discipline: Communication Science and Disorders

Author/Contributors:
Yaileen Velazquez

Abstract Name: **Understanding Anatomy & Physiology students' knowledge and perceptions of learning sexual health**

The purpose of this research is to understand Anatomy; Physiology (AP) student's knowledge and perceptions of learning about sexual health and sexual pleasure. Investigating the understanding of this will entail analyzing surveys on students' knowledge of sexual health and their perceptions of learning about sexual health in both class settings and out of class settings. The surveys will also allow us to compare student growth in the subject from the start of the semester to the end of the semester of their AP classes. The overall purpose of this project is to include sexual pleasure in AP context. By adding this context in AP it will cause science to be significantly more inclusive. Especially when using sexual pleasure and the associated anatomy and physiology to represent a true variation of people, not just androcentric and heteronormative people but also LGBTQ+ communities, experiences, and bodies. It is important to realize that by including a truer variation, science communities will gain valuable perspectives, acceptance, and it will provoke new thinking. Additionally, as a result of adding sexual pleasure in A&P context, it will prepare healthcare professionals when having conversations or treating sexual health matters. For having sexual pleasure education in AP context can empower individuals in their own bodies. For this reason, it is important to consider the knowledge and perceptions of students in order to incorporate sexual health and pleasure into undergraduate curricula.

Velez, Sebastian

Institution: *AZ - Mayo Clinic - Phoenix*

Discipline: Computer Science/Information Systems

Author/Contributors:
Sebastian Velez, *Kristin Swanson*, *Lee Curtin*, *Kamila Bond*, *Javier Urcuyo*, *Gustavo De Leon*, *Andrea Hawkins-Daarud*, *Peter Canoll*, *Osama Al-Dalahmah*, *Peter Nakaji*, *Bernard Bendok*

Abstract Name: **CIBERSORTx: Deconvolution of Glioblastoma Transcriptomics to Quantify Tumor Heterogeneity**

Glioblastoma (GBM) is the most aggressive primary brain tumor characterized by biological heterogeneity within and between patients. Deconvolution methods have shown recent promise in their ability to characterize tumor heterogeneity by enumerating cell state abundances and their gene expression levels from cheap bulk RNA-Seq datasets using a single cell RNA-Seq reference. However the accuracy, reliability and reproducibility of these methods remains challenging to assess particularly when most require these reference datasets to be downsampled. To assess these metrics we selected CIBERSORTx, a machine learning deconvolution framework to predict cell state composition and cell-specific gene expression levels. Moreover, we conducted univariate and multivariate Cox proportional hazard models to test whether these cell state abundances are prognostic. We have applied CIBERSORTx to two separate cohorts of bulk RNA Seq: image-localized biopsies from Mayo Clinic and Barrow Neurological Institute (157 samples, 44 patients), and TCGA (173 samples, 166 patients) along with a single nucleus RNA-seq reference cohort (32980 cells, 22 samples, 7 patients) that has 18 cell states, which cover a variety of tumor, immune and normal cells. First pass analysis shows similar cell state abundances and cell-state correlations between cohorts. We found 6 prognostic cell states for overall survival in univariate analyses. Our work not only provides more biological insight for treatment stratification, but uses this approach to connect omics and imaging to gain a deeper insight into GBM heterogeneity non-invasively.

Vera, Lucia

Institution: *IL - North Central College*

Discipline: Biology

Author/Contributors:
Nicole Baker,
Ian Rosales,
Lucia Vera

Abstract Name: **Quantifying the Relationship Between Arbuscular Mycorrhizal Fungi and a Native and Invasive Thistle**

Our research explored the relationship between arbuscular mycorrhizal (AM) fungi and two prairie plants – the native Pasture Thistle (Cirsium discolor) and the invasive Canada Thistle (Cirsium arvense). AM fungi associate with the majority of plants and assist in mineral nutrient uptake. In return, they receive photosynthetically fixed carbon from host plants. Their relationship with plants can be quantified by assessing dependence upon and responsiveness to AM fungi. Dependence is defined as the plant's inability to grow without AM fungi while responsiveness is the growth difference between inoculated and non-inoculated plants. We hypothesized that Pasture Thistle would have a stronger responsiveness and dependence on AM fungi than Canada Thistle because of the degraded mutualism hypothesis, which states that invasive species do not associate with local mutualists as closely as native plants. To test this hypothesis, we grew plants with and without AM fungi at ten different soil phosphorus levels, with twelve replicates per treatment. We measured the longest leaf length and height weekly, and after 10 weeks of growth, determined overall root and shoot biomass. We found that Pasture Thistle and Canada Thistle could both grow without AM fungi. Pasture Thistle was more responsive to AM fungi, growing 37% better when inoculated than when not inoculated, while Canada Thistle, showed a negative responsiveness. These results support our hypothesis that the invasive species would have a degraded mutualism with AM fungi. It is likely Canada Thistle lacks a strong relationship with AM fungi because it grows in disturbed areas where there is a low AM fungal presence.We also found that Pasture Thistle was most responsive at a soil phosphorus level similar to that in its native range, suggesting that it likely has a shared evolutionary history with AM fungi.

Versaskas, Allison

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Allison Versaskas,
Sarah Heuss,
Christopher Davis

Abstract Name: **Randomly Generating the Unknot**

The definition of a knot in knot theory is an embedding of a circle in 3-dimensional space. Two knots are called isotopic if they can be deformed to each otherwithout cutting or passing a strand through another. Knot theory was first introduced in the 1960s by chemists Frish-Wasserman, and biologists Delbruck-Fuller. We study a new perspective on the theory of random knots based on the universal knot diagrams introduced in a recent paper by Even-Zohar--Hass--Linial--Nowik. We ask what the probability of a randomly generated potholder knot is unknotted. A potholer knotconsists of a family of knots starting with an n-by-n square grid. As the parameter n goes to infinity every knot admits such a diagram. By studying small potholder diagrams, we present some numerical evidence toward the conclusion that the probability of a randomly generated potholder knot being unknotted should be zero. We present explicit computations of theexpansion of these potholder diagrams in one direction. By studying the process of randomly generating a potholder knot in terms of a Markov chain, we present forward progress towards proving this result. These preliminary results represent a work in progress.

Vetter, Zoe

Institution: *MO - Truman State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Zoe Vetter,
Dominic Caputa

Abstract Name: **Computational Discovery of an Inhibitor to APOBEC3B as Treatment for Cancers**

APOBEC3B is a naturally occurring protein in humans which has the purpose of fighting off certain ailments, such as HIV, by changing certain nucleic acids in our DNA. For immunity purposes, it is typically beneficial to have such a protein in our bodies. However, fitting with the textbook definition of cancer, the problem occurs when there is an overexpression of APOBEC3B in our bodies. At that point, APOBEC3B begins to convert too many nucleic acids, and this helps create more mutations in our cells which in turn creates tumorous bodies as the cells begin to replicate rapidly. The goal of this research would be to help find an inhibitor for the APOBEC3B protein from a database of unresearched ligands to keep the protein from binding to our DNA and creating hazardous cell growth. The primary source of these potential inhibitors isthe ZINC12 database from which we have already sorted through six million different candidates to find the top 200.From the six million candidates, the top 30 have been selected based on how easily they might bind to APOBEC3B. Now, similarities havebeen found between those top candidates and then improved upon using chemical intuition and drug design techniques to create the best drug possible. However, we have also used a novel technique,de novo ligand design, which uses software to assemble entirely new candidates based on those same top 30 candidates. We have now simulated those de novocandidates in the same manner as the previous candidates, and this analysis has produced a promising inhibitorof APOBEC3B, and keptthe drugbound to the protein in increasingly more realistic situations.

Vicente, Marcel

Institution: *CT - Eastern Connecticut State University*

Discipline: International Studies

Author/Contributors:
Marcel Vicente,
Olga Kvitaisihvili,
Ross Gallace

Abstract Name: **Interventionism and American Foreign Policy: Tracking Public Opinion on U.S Foreign Policy and Recent International Events**

On August 26, 2021, 13 U.S. service members were killed during the final departure of U.S. Forces from Afghanistan after 20 years of war. This incident has brought U.S. foreign policy decisions into the spotlight. As soldiers and Gold-Star families begin to process the disaster in Afghanistan, more and more Americans grow concerned with American foreign policy. The results of this work will assist in our understanding of how young citizens are being affected by the current political climate, and how their identity might present a bias in their opinions on foreign policy.In order to link certain demographic qualities to feelings on U.S. foreign policy, we conducted a survey consisting of open and closed-end questions regarding demographics and exclusive questions relating to foreign policy. A total of 121 students from Eastern Connecticut State University participated in this research to give us an interpretation of the feelings of students toward this topic. Overall, the findings displayed throughout this research established a relationship between the variables we cared to examine. For example, one of the biggest findings was that democratsare 15.02 times more likely to believe that the United States should play a role in hosting refugees as it relates to foreign policy. This generation has seen unprecedented global instability and the ultimate goal is to understand the impact of recent events and how one's social/political identity has impacted this. Hopefully, these findings will motivate others to audit their own beliefs and see the other side of the fence in terms of policy.

Vilches, Jazmin

Institution: *UT - Weber State University*

Discipline: Nursing/Health Science

Author/Contributors:
Jonah Christensen *Julian Chan* *David Aguilar-Alvarez*
Joanna Gautney *Victoria Ayala* *Jazmin Vilches*

Abstract Name: **Increased Intake of Alpha-Linolenic Acid is Associated with Higher Exam Scores**

Roughly 60% of the human brain is fat. Essential fatty acids (EFAs) Linoleic and alpha-linolenic acids are critical for building the brain's structure, synthesis of neurotransmitters, and developing the visual cortex, among other important functions.This study investigates how EFAs intake may affect brain function, and if these effects are reflected in student exam performance. We hypothesize that increased consumption EFAs will be associated with higher test scores.An analysis of cognitive function based on exam scores was conducted on 602 student participants attending Weber State University. Two-day diet records were collected. Grams as well as percentages of recommendation consumed based on required calories of linoleic and alpha-linolenic EFAs were calculated from the diet record using Diet and Wellness Plus software. The data analysis was completed using RStudio. Models were created using linear regression and variables were removed based on p-value using backward elimination. The best model created included the following variables: LinoleicCal% (the fraction of the total calories required provided by linoleic fatty acid), α-LinolenicCal% (the fraction of the total calories required provided by alpha-linolenic fatty acid), and the interaction between the previous two variables. Exam scores increased by 5.43 times, for each additional α-LinolenicCal% percentage increase ($p = 0.01$). For each percentage increase on both LinoleicCal% and α-LinolenicCal%, exam scores decreased by 0.27 times ($p = 0.02$).Our results show that it is not only the amount but also the ratio in which these two fatty acids are consumed that influences exam score performance. This is in accordance with previous studies showing that intake of omega-3 polyunsaturated fatty acids are inversely related with risk of impaired memory and flexibility in middle aged adults.

Villafuerte, Maya Isabel

Institution: *MN - St. Catherine University*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Sophia Gibson,
Maya Isabel Villafuerte

Abstract Name: **Welcoming The Dear Neighbor: The Catholic Interracial Council Twin Cities**

Conversations surrounding racism both on individual and systemic levels continue to be at the forefront of American society. Our research aims to understand the tensions between individual and systemic solutions to racial change in the context of the Twin Cities during the 1950s and 60s. Though implications of racist thought have permeated the country for centuries, the 2020 murder of George Floyd and subsequent recent racial unrest in Minnesota has increased conversations concerning systemic change. To understand how systemic change will look in the future, we must first understand the efforts of the past. Our research centers on one national organization striving for change during the mid 20th century, the Catholic Interracial Council, also known as the CIC. The Twin Cities chapter of the CIC (CICTC) made great headway with community action and education during the beginning of the civil rights movement, but fell short of lasting systemic change. Though many efforts were made within the community, no legislature was passed to further their mission of racial equity. To understand CICTC contributions in conversations surrounding discrimination, inequality and needed change, we conducted an oral history interview with CICTC founding member, Patricia Caponi. Following the interview, we examined some of her personal documents from her time in the CICTC which included newsletters, correspondence, and informational pamphlets. Through analyzing these sources, we were able to see the challenges in working to alleviate systemic racism, such as the lack of supportive legislature and community push-back to anti-racist policy. Analyzing the CICTC's work demonstrates the possibilities and limits of individual efforts in anti-racist efforts and the importance of systemic change.

Villalva, Wendy

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Wendy Villalva

Abstract Name: Learning Hispanic Community Health Needs Through Oral History Interview in Rural Western Wisconsin

At the onset of the COVID-19 pandemic, UWEC's Public History Program and McIntyre Library joined with the Chippewa Valley Museum to launch the Western Wisconsin COVID-19 Archive (WWCA), a rapid-response project archiving oral histories and artifacts related to COVID-19 and its impacts in Western Wisconsin. One of the imperatives of the archive is to preserve a diverse picture of the pandemic's effects across our communities. With this goal in mind, a team of UWEC History, Spanish, Latin American; Latinx Studies, and Nursing faculty and students launchedVoces del Campo/ Rural Voices, which has worked to preserve oral histories with the immigrant Hispanic and Latinx farmworkers who have become the essential—but often silenced—backbone of Wisconsin's dairy industry. Documenting immigrant experiences is essential for present and future students, educators, policymakers, public health providers, and community members to understand and provide health and community infrastructure for the diverse rural communities of western Wisconsin. This presentation will present the methods used and lessoned learned by students conducting and analyzing oral history interviews with rural, multilingual communities. In particular, the presentation will demonstrate trends in health and community concerns and beliefs revealed through the analysis of Spanish-language interviews conducted with farmworkers during COVID-19 vaccine clinics using the qualitative data analysis software NVivo. Following the discussion of methods, challenges, and trends, the presentation will offer practical advice for how to utilize interviews and their analysis to improve public health initiatives, along with ideas for how students and faculty across a variety of academic disciplines can incorporate oral history interviews and analysis into their own research agendas.

Villamayor, Malita

Institution: ***WI - University of Wisconsin-Superior***

Discipline: English/Linguistics

Author/Contributors:
Jessica Waldbillig,
Malita Villamayor,
Basith Nasik

Abstract Name: University of Wisconsin-Superior Writing Center: Collaboratively Creating an Equity, Diversity, and Inclusion Statement

In this presentation, we will be discussing the content and process of creating an Equity, Diversity, and Inclusion (EDI) statement. We specifically worked on an EDI statement for the University of Wisconsin-Superior Writing Center. We, as Writing Center staff, felt it was important to have our own EDI statement in addition to our University's general statement. We wanted to make it specific to what we do: meet students where they are in their writing journey and give them the tools to expand their writing skills. With our EDI statement, we wanted to emphasize that the Writing Center is a place of learning for everyone regardless of their race, ethnicity, sexuality, cognitive ability, etc. In addition, we wanted to emphasize that we, as writing consultants, are committed to having a growth mindset. After the idea was pitched in a staff meeting, we analyzed Inclusivity/Anti-Racism statements from four organizations outside the University. We then identified ideas we felt were important before combining them into three themes relevant to the Writing Center: linguistic freedom, anti-racism and inclusivity, and safe spaces. With these themes in mind, we drafted a statement and got feedback from other campus organizations. After several revisions, the final EDI statement was published on the UW-Superior website. One major benefit of collaboratively creating our EDI Statement is that it helps us to reflect and prioritize our shared goals and values—plus, it communicates our values and priorities to the entire campus. Our EDI Statement encourages diverse voices and welcomes people of all identities, including those based on neurodiversity, which echoes our mission statement.

Villarreal, Edgar

Institution: *TN - Christian Brothers University*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Laura Billings,
Paola Campos Luis,
Amy Guerrero,
Edgar Villarreal,
Erlin Rodriguez

Abstract Name: **Neural and Behavioral Correlates of Sensation Seeking**

We sought to clarify both behavioral and neural characteristics of sensation seeking. In particular, wewere interested in two components of event-related brain potentials (ERPs) elicited during a response inhibition task: the P3a, which is elicited by novel, unexpected, stimuli, and the P3b, which is elicited by targets. Participants completed self-report questionnaires to measure their sensation seeking. During the task, participants were presented with three types of visual stimuli in randomized order at a rate of approximately one every 1.25 s. The stimuli were (1) non-targets, to which they should make a response, (2) targets, to which they should withhold a response, and (3) novel stimuli, to which they should withhold a response. The targets and non-targets were relativelybenign,but required sustained attention to tell them apart. The novel stimuli were photographs depicting arousing situations (e.g., skydiving). Based on previous research, we predicted that (1) the P3a would be positively correlated with sensation seeking, (2) the P3b wouldbe negatively correlated with sensation seeking, and (3) response accuracy to novel stimuli would be inversely correlated with sensation seeking. P3a and total sensation seeking were positively correlated, but the relationship was small and not statistically significant. In contrast to our prediction, P3b was moderately positively correlated with total sensation seeking. Finally, response accuracy was not correlated with total sensation seeking. Although none of our hypotheses were supported for total sensation seeking scores, we did find relationships between the ERP components and total sensation seeking, boredom susceptibility, and disinhibition.

Vincent, Aleah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Music**

Author/Contributors:
Aleah Vincent

Abstract Name: **Equilibrium Quartet presents Keen by Roshanne Etezady**

Equilibrium is a saxophone quartet at the University of Wisconsin-Eau Claire. The quartet was formed in Sepember of 2021 and is composed of undergraduates students, all with different majors: music education, applied instrumental music, integrated strategic communication-advertising, and biology. In our time as a quartet, we have performed in masterclassses, auditioned for competitions, and prepared multiple recitals. As an ensemble, we are interested in exploring timbre, balance, and color within the constraints of saxophone quartet. The saxophone is an incredibly flecible instrument capable of producing a wider range of wounds and colors. Roshanne Etezady's piece,Keenutilizes the saxophone quartet's unique ability to blend into one homogenous sound by leaning on droning characteristics to drive the piece. Etezady also highlights the individual instrument's timbral qualities in solo passages. We chose this piece because it explores a wide range of colors and challenges musicians to maintain consistent blend and balance in the extreme registers and dynamics of the saxophone. We are excited to share the music of Roshanne Etezady, a contemporary classical composer who uses timbre and balance to capture intense emotions in the pieceKeen. To keen means to express grief with a loud and sustained cry of sorrow. Etezady uses the concept of keening to stucture the piece and model the emotional affect of the title. However she goes beyond imitating this human response to grief. The unison drones are contrasted by shifting melodic lines andintense dissonances that further evoke a distressing affect. In our performance, we hope to convey this intense feeling of sorrow and highlight the work of composer, Roshanne Etezady.

Violette, Meghan

Institution: *FL - The University of Tampa*

Discipline: Biology

Author/Contributors:
Meghan Violette,
Padmanabhan Mahadevan

Abstract Name: **Evaluation of various short read genome assemblers on sea slug genomic data**

Each living organism, such as a human to a fish possess a genome, which is the complete set of genetic material. After sequencing a genome, the process of genome assembly takes fragments of nucleotide (DNA) sequences and places them in the correct order. There are different kinds of programs that allow us to take a great number of these sequences and place them in an order that corresponds to the original sequence. Scientists use the genome assembly to find out information such as the evolution of a species and compare genomes with other species. In this project, we are working with DNA sequences from the sea slug Elysia crispata. Interestingly, this sea slug is photosynthetic. We sequenced the genome of this sea slug and we used 13 different genome assembly programs to attempt to assemble this genome. We wanted to determine which of these programs (MEGAHIT, SPAdes, ABySS, MaSuRCA, Clover, Platanus allee, Mini SR, Wengan, IDBA, SOAPdenovo, Geneious, GATB-Minia and Discovar denovo) produced the best genome assembly. Our results showed that the top 2 genome assembly programs were MaSuRCA and MEGAHIT. MaSuRCA reference assisted, MaSuRCA and MEGAHIT produced the assemblies with the highest percent of complete and partial core genes with the sea slug data. However, they are still highly fragmented given the high total number of sequences in the final assemblies.

Vivona, Thomas

Institution: *NC - Elon University*

Discipline: Physics/Astronomy

Author/Contributors:
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Chris Richardson,
Jordan Wels <jwels@elon.edu>,
Mugdha Polimera,
Sheila Kannappan

Abstract Name: **Theoretical Predictions of WISE Photometry for Dwarf Galaxy AGN**

All large galaxies, like the Milky Way, host supermassive black holes (SMBHs) with masses greater than 1,000,000 solar masses at their centers. While stellar mass black holes (10-100 solar masses) are also common, intermediate mass black holes (IMBHs) between the two extreme mass regimes remain surprisingly rare. SMBHs may have evolved in different ways, but at one stage of their evolution they must have been IMBHs. Therefore, finding IMBHs can shed light on the evolution process of SMBHs. A premier way of identifying black holes is to look for active galactic nuclei (AGN), a combination of a black hole and an accretion disk that sits in the center of a galaxy, because they can produce more radiation than the entire rest of the galaxy. Dwarf galaxies show promise for finding IMBHs because they resemble galaxies of the early universe when SMBHs formed, but there is a lack of data on dwarf galaxies with active galactic nuclei (AGN). Previous papers have identified AGN using infrared photometry, the summation of the light output over a range of energies. The Wide-field Infrared Survey Explorer (WISE) has gathered photometric values on 3/4ths of a billion astronomical objects. Our preliminary results from simulated dwarf AGN suggest that WISE photometry primarily identifies dwarf AGN as star forming galaxies because of their low ionization and the low percentage of the total light output coming from the AGN. However, observations show that some dwarf galaxies are actually identified as AGN using WISE photometry. In these cases, our simulations can provide unique constraints on the physical conditions within those galaxies, which represents progress in understanding the hosts of IMBHs.

Vo, Tien

Institution: *WI - University of Wisconsin-Madison*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tien Vo,
Joseph Mason

Abstract Name: **Remote Sensing Analysis of the Relationship Between Sand Dune Topography and Vegetation Response to Varying Precipitation in the Central Great Plains**

The Central Great Plains is a premier site of potentially mobile loess (wind-blown dust deposits) and sand dune landscapes. As climate quickly changes, these features are vulnerable to destabilization and movement as the likelihood of extreme weather increases. To predict sand dune response to changing climates in the future, it's important to understand how sand dune landscapes have historically responded to changing climate. The objective of the study is to determine how vegetation on sand dunes have reacted during previous years with high and low precipitation. Vegetation is a potential factor in susceptibility to erosion and thus landscape stability. Using various remote sensing data, the study aims to determine how vegetation responds to unusually dry and wet years in different parts of sand dunes, such as the crests and interdunes. Understanding the relationship between sand dune topography and vegetation growth is key to predicting sand dune activation and movement, both of which are processes that can significantly affect landscape morphology in the Central Great Plains.

Voermans-Dean, Haley

Institution: *MN - University of Minnesota - Duluth*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Haley Voermans-Dean,
Dr. Daehyoung Lee,
Dr. June Lee

Abstract Name: **A Comparison of Actigraph Accelerometers Worn on Non-Domninant and Dominant Wrists in Free-Living Conditions**

Background: Physical activity (PA) levels act as indicators of overall health status to the public as well as healthcare providers. Accurately quantifying PA levels is a key component for creating and analyzing public health initiatives to increase PA among the general population (Buchan et al., 2020). As technology has advanced, wearable activity trackers have become one of the most popular means of measuring daily PA (de Man et at., 2016).Purpose:The purpose of this study is to examine the degree of agreement between PA data collected from accelerometers worn on the dominant and non-dominant wrists, which will help us verify the conventional use of the non-dominant wrist as a device placement in PA studies. Methods: This project will be conducted over the spring of 2023, and 15 college students will be recruited from the University of Minnesota Duluth. Participants will wear an Actigraph Centrepoint Insight Watch (Pensacola, FL, USA) on both their dominant and non-dominant wrists for seven consecutive days during waking hours. PA as a variable will be identified using the following measures: step counts, time spent for each PA intensity (e.g., sedentary time, light, moderate, and vigorous PA) as well as raw vector magnitude. Frequency and intraclass correlation analyses will be performed to compare the PA data collected from non-dominant and dominant wrists, as well as weekday and weekend days.Expected results:It is unclear whether the results of this study will show significant discrepancy between data collected on the two different device placements, which is why the findings of the proposed study are valuable.Conclusion:As it becomes more prevalent for PA to be tracked using a wrist-worn device, the findings of this study would help healthcare professionals, as well as the general public, better understand how to accurately measure and interpret their PA information.

Vogel, Christoph

Institution: ***SC - College of Charleston***

Discipline: Physics/Astronomy

Author/Contributors:
Alexander Garber,
Christoph Vogel,
William Pendergrass

Abstract Name: Nondimensional Wind Shear Over West Texas Terrain

Nondimensional wind shear was computed using high frequency wind measurements obtained on a 30 meter tower located near Big Spring, TX. The three components of the wind, along with temperature, were sampled at 32 Hz using sonic anemometers positioned at five height levels on the tower. Coordinate rotations were performed to produce longitudinal, transverse and vertical components of the winds and turbulence statistics were generated for the different measurement heights. These statistics allowed inter alia for the determination of u_star velocity scales, nondimensional wind shears, and Monin-Obukhov stability parameters. Because of limitations due to a significant roughness sublayer and finite fetch, two middle height levels were used in the analysis. Parameterizations found from previous studies are compared to results from this analysis.

Voytik, Lane

Institution: ***PA - Westminster College***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Lane Voytik,
Joseph Balczon

Abstract Name: Identifying Beta-lactam antibiotic resistant E.coli using immunofluorescence with antibodies specific to beta-lactamase.

Bacterial antibiotic resistance is a global phenomenon with significant implications for human health. Pathogen resistance has been proposed to result from horizontal gene transfer from non-pathogenic resistant organisms. Resistance genes are common in natural microbiomes, however, their distribution in nature is not well-characterized. The goal of this project was to develop a sensitive immunofluorescence assay to detect bacterial resistance to beta-lactam antibiotics. Escherichia coli cells were transformed using a plasmid containing a gene for beta-lactamase. Resistant and non-resistant E. coli were fixed, adhered to coverslips, and exposed to antibodies specific for the enzyme TEM-beta lactamase. A secondary antibody with a fluorophore was incubated with the E. coli cells. Cells were also stained with DAPI to visualize DNA to obtain a total count of bacteria in the sample. Fluorescence microscopy was used to detect the presence of cells containing beta-lactamase. Our results showed that immunofluorescence was useful in detecting beta-lactamase expressing E. coli cells. Non-transformed E. coli cells showed no immunofluorescence. Transformed E. coli cells exposed to secondary antibody alone did not show fluorescence, indicating that there was no non-specific binding of the secondary antibody. Our results indicate that immunofluorescence is a promising technique for detecting bacterial resistance to antibiotics such as penicillin or ampicillin.

Vue, Kagee

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Abbey Joyner

Abstract Name: The Associations between Belongingness, Trust, and the Willingness to Donate to One?s Alma Mater

Donations are a vital part of keeping universities up and running across the globe. Thus, it makes sense that universities have a vested interest in fostering relationships with students that will generate future donations. This study examines the degree to which feelings of belongingness, trust, and engagement in campus activities affect an individual's willingness to donate to their alma mater. The 72 participants in this study represent a diverse group of students at the University of Wisconsin-Eau Claire. The findings indicate that feelings of belongingness with the university and the belief that one can trust the university are more strongly associated with a willingness to donate. Engagement in campus activities was not significantly associated with a willingness to donate. Thus, we learned that while it is important for a university to provide opportunities for students to engage in campus life, the university should spend equal time fostering a sense of belongingness and trust with their students.

Vyas, Rohan

Institution: ***MI - University of Michigan - Ann Arbor***

Discipline: Economics

Author/Contributors:
Rohan Vyas *Judith Long* *Madison Boyd*
Eli Feldman

Abstract Name: Michigan Sports Tourism Strategy Project: Inventory Phase

Communities nationwide are pursuing the sports tourism industry to generate economic and social benefits. As such, local and state governments are striving to incentivize the public and private promotion of sports tourism events and the construction of venues. Because the study of the relationship between public investments and sports tourism benefits is emerging, there is a gap in research and data to guide these endeavors. Moreover, as competition grows between prospective host municipalities, coordination at the regional and state levels will be crucial in preventing inefficiencies. In Michigan, there is an aspiring, grassroots push to create a state-level sports tourism strategy to foster coordination and reduce inefficiencies. Among the first steps in any state-level movement is the development of a database of sport tourism events and venues. In this project, we examine the role of event and venue inventories as a critical baseline for strategy formulation, asking questions about how inventories should be designed, assessing database management options, and identifying challenges around data collection from public and private sources. Specifically, we utilize a mixed-methods approach to create a state-wide database of sports tourism events and venues in the State of Michigan from 2010 to 2022. First, we collect and report on quantitative data for events and venues like size, type, capacity, location, sport, and community details. Next, we augment these event and venue data with qualitative data from interviews with key stakeholders, including public officials, industry professionals, and regional sports commissions. From these findings, we make recommendations about the creation of a state-wide sports tourism strategy for Michigan and, by extension, developing a model for other states in the US. By focusing on state-level strategies, this research fosters efficient investments into the industry and, ultimately, increases the capture of economic and social benefits from the sport tourism sector.

Wael, Nadine

Institution: *EGY - The American University in Cairo*

Discipline: Environmental Studies

Author/Contributors:
Mariam Jama,
Aya Emadeldeen,
Nadine Wael

Abstract Name: **Socioeconomic Vulnerability and Environmental Inequalities: a Case Study of Climate Change Impacts in Egypt's Delta Agricultural Sector**

Egypt's Nile Delta has historically had a significant impact and drawn a sizable population because of its abundant resources and trading opportunities. The Nile Delta faces a significant risk of being severely damaged due to flooding brought on by extreme climate change. Temperature increases, unpredictable rainfall patterns, and increasing sea levels are some of the effects of climate change on these cities. When we start to look deeper at the impacts of climate change on different groups of people, a question begins to pose itself. How are the effects of climate change distributed, and is it proportional to the level of contribution to emissions? The objectives of this research are to identify the detrimental effects and threats of climate change on farmers in Egypt's delta agricultural sector and the vulnerability of farmers. A hybrid methodology and system mapping were used to accomplish these objectives. Farmers and other internal and external stakeholders, including professionals, government officials, and NGO representatives, were also interviewed. The results of this study show and prove that farmers in Egypt's delta region are highly vulnerable due to ineffective practices and weak and inadequate government communication. The study also demonstrates that households with lower incomes and less access to natural resources are more vulnerable to the risk of flooding and sea level rise. Income disparities and asset distribution at the community level tend to be greater at higher risk exposure levels, suggesting that households with higher individual vulnerability also have higher collective vulnerability.

Waggener, Benjamin

Institution: *NC - Elon University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Benjamin Waggener

Abstract Name: **Learning and Memory in Harvester Ants**

Ants are an effective animal model for associative learning, and the purpose of these experiments was to produce a novel paradigm for studying associative learning in harvester ants and to measure the retention of learned associations. In Experiment 1, ants were maintained in nests consisting of a gel food source containing sucrose (“US only” condition), with some animals that were also exposed to a plant stimulus in their nests (“CSUS” condition). Ants were later individually tested using a stimulus discrimination task that measured ants’ engagement with familiar and unfamiliar stimuli. Ants did not show a preference for the paired (familiar) stimulus; however, animals in the paired condition spent more time overall engaging with the stimuli than ants in the US only condition. In Experiment 2, we examined associated learning using a modified paradigm in which ants were maintained on a sucrose-restricted diet and later exposed to a novel gel food source containing sucrose (“US only” condition), with some animals exposed to the gel treated with a plant stimulus (“CSUS” condition). Like Experiment 1, ants were later individually tested using a stimulus discrimination task that occurred either 1 hour, 24 hours, or 48 hours following the end of exposure to the gel. Ants showed a preference for cilantro when paired with the gel after 24 hours (0.03), but not after 1 hour or 48 hours (p’s 0.05). Ants in the CSUS condition spent more time exploring the plant stimuli than ants in the US only condition after 24 hours, but not after 1 or 48 hours. These findings suggest that associative learning using these paradigms is retained at 24 hours.

Wagner, Azaria

Institution: *IN - Rose-Hulman Institute of Technology*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Azaria Wagner,
Vipin Paliwal

Abstract Name: **Ethyl Cinnamate Nanobead Sunscreen Characterization Using Mouse Skin NIH/3T3 Fibroblast Cells**

Exposure to the sun with no skin protection can result in damage to skin cells and the DNA within. Many commercially available sunscreens use nanoparticles as physical blockers to reflect or absorb the ultraviolet B radiations (UVB). Nanobeads, on the other hand, can absorb UVB while safely encapsulated—preventing the formation of dangerous radicals. In this project, ethyl cinnamate embedded nanobead sunscreen was synthesized from a commercial ester, ethyl cinnamate, and characterized for effectiveness in preventing DNA damage from harmful UVB rays using mouse skin fibroblasts, specifically a NIH/3T3 cell line. The ethyl cinnamate nanobead sunscreen was synthesized by embedding ethyl 4-methoxycinnamate in a polymer “shell” of Pluronic, a 3-block copolymer that has a hydrophobic middle and two hydrophilic ends. Synthesis of nanobeads was performed by previously optimized technique called Flash NanoPrecipitation. Briefly, the technique involved combining one stream of organic solvent (containing the Pluronic and ethyl 4-methoxycinnamate) with two streams of deionized water in a custom-made flash precipitation apparatus. Thin layer chromatography (TLC) and UV/Visible spectrophotometry with a lambda-maxof 288 nm confirmed the purity of the product. The effectiveness of nanobead sunscreen was determined by concentration-based trials on 3T3 mouse fibroblasts using the Neutral Red Dye cytotoxicity test. Samples were exposed to UVB light and a decrease in cell death was measured for various dilutions of the nanobeads. DNA damage in the form of Thymine-Thymine (T-T) dimer formation was quantitated using an Enzyme Linked Immunosorbent (ELISA) assay to measure the formation of 6-4 photoproducts and then compared to a no sunscreen nanobead control. A thin layer of nanobeads was 99.02% effective at preventing T-T dimer formation from UVB.Keywords: Sunscreen, Nanobeads, Fibroblasts, 6-4 photoproducts, Thymine dimer

Wainwright, Grace

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biology

Author/Contributors:
Victoria Carlsten *Grace Wainwright* *Ellie Williamson,*
Sayaka Mochizuki *Chelsea Ortiz-Jimenez* *Jennifer Smith*

Abstract Name: **What?s all that noise about?: Alarm-calling in California ground squirrels**

Many socially-living diurnal animals have evolved vocalizations known as alarm calls as a mechanism for reducing predation. California ground squirrels are a major prey species for coyotes, rattlesnakes, and birds of prey, but must also cope with human foot traffic and anthropogenic noise. This project characterizes the acoustic structure, duration, ecological context, and timing of these calls produced by ground squirrels. Combining naturalistic and automated acoustic monitoring, we describe the extent to which humans and dogs versus natural predators trigger naturally-occuring alarm calls in California ground squirrels across the 24-hour cycle. First, from naturalistic observations as part of my Long-term Behavioral Ecology Project on California ground squirrels at Briones Regional Park, we document that calls are associated with natural predators but not humans visitors. We also describe the contexts in which squirrels produce either a short, non-repetitive vocalization or a longer repetitive bout of alarm calls. Second, we present data from acoustic monitoring devices and camera traps that confirm ground squirrels mainly call during daylight hours, a time of day before coyotes emerge at the site. Our data confirm the alarm-calling “schedule” for these animals and offer new insights into not only what triggers them to call but also the temporal patterning of fear responses over time.

Wairimu, Sandra

Institution: *TN - University of Tennessee at Knoxville*

Discipline: **FAN Abstract**

Author/Contributors:
Sandra Wairimu *Dr. Janna Caspersen* *Dr. Erin Darby*

Abstract Name: **Student Self-Reflection as a Tool for Tracking & Assessing The Undergraduate Research Experience: What advice would you give to yourself before your first research experience**

This presentation focuses on scholars who have participated in undergraduate research and reports on findings from a survey that investigated student perceptions of the advice they would give themselves prior to their first research experience. Students who participated in the survey presented their research at a multidisciplinary poster symposium. Students voluntarily filled out anonymous surveys on paper postcards (n=69). Data included the scholars' responses to the survey question, the students' major, and class standing. Thematic analysis of survey questions revealed encouraging sentiments and constructive advice, such as lack of data being a part of the process, self-confidence, and fruitful experiences. Preliminary themes included: active participation, dynamic learning, and self-belief. This presentation provides insight into the self-reported lessons learned through practical research experience. The main goals of the survey were: to offer symposium presenters an opportunity for self-reflection on their research experiences and to remove the intimidating perception of an exclusive environment, associated with high-impact research experiences. By offering a visual representation of multifaceted advice from accomplished peer researchers, new student researchers could feel encouraged to participate and stay in research experiences. These findings offer insight into avenues for enhancing the student experience during intake by naming the challenges and encouraging them to be bold in their approach while also helping coaches see where scholars can be encouraged to be bold in their approach. Promising applications for tracking and assessment include: assessing progress midway through a lens of developmental milestones, proactively and cooperatively deploying inclusive interventions to barriers, inviting the student into the problem-solving process, and offering tools that promote self-efficacy and a sense of well-being throughout the research process for student success.

Wakefield, Timothy

Institution: *AR - Arkansas State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Timothy Wakefield

Abstract Name: **Automated Cosmic Ray Shield**

A Cosmic ray is defined as a highly energetic atom or other particle traveling through space near the speed of light. These particles which also include light are harmful to humans and electronics devices that are unshielded from them. Current Cosmic ray shielding consists of Steel-Aluminum alloy plates with a small gap between them to block particles through sheer mass and attenuation which is not effective enough for long term use. A more effective means of shielding from cosmic rays will need to be implemented to make space travel more viable.This project will logically simulate the sensor input output to control a gas that will be ionized, most likely hydrogen to create the cosmic ray shield that will react to various degrees of radiation dynamically. Due to the hazardous environment that is space the system will need to carefully control voltage and temperature of the plasma used as a shield. The operation is as follows: sensor detects cosmic rays then system energizes gas to absorb / deflects rays with a variable voltage control. The system finds an equilibrium point between electrical current applied to the ionized gas and the absorption/deflection and detection of incoming cosmic rays. A voltage potential is applied to the gas which ionizes it changing its state to plasma which allows the hydrogen to absorb more energy. The plasma will deflect the most cosmic rays while a current is running through it providing structure to the plasma. And creating the electrostatic and magnetic field which will assist in particle deflection. The system will settle into an equilibrium position where the least amount of current necessary to absorb and deflect particles is supplied to the plasma. While retaining the potential to increase current flow depending on ray intensity.

Waldbillig, Jessica

Institution: *WI - University of Wisconsin-Superior*

Discipline: English/Linguistics

Author/Contributors:
Jessica Waldbillig,
Malita Villamayor,
Basith Nasik

Abstract Name: **University of Wisconsin-Superior Writing Center: Collaboratively Creating an Equity, Diversity, and Inclusion Statement**

In this presentation, we will be discussing the content and process of creating an Equity, Diversity, and Inclusion (EDI) statement. We specifically worked on an EDI statement for the University of Wisconsin-Superior Writing Center. We, as Writing Center staff, felt it was important to have our own EDI statement in addition to our University's general statement. We wanted to make it specific to what we do: meet students where they are in their writing journey and give them the tools to expand their writing skills. With our EDI statement, we wanted to emphasize that the Writing Center is a place of learning for everyone regardless of their race, ethnicity, sexuality, cognitive ability, etc. In addition, we wanted to emphasize that we, as writing consultants, are committed to having a growth mindset. After the idea was pitched in a staff meeting, we analyzed Inclusivity/Anti-Racism statements from four organizations outside the University. We then identified ideas we felt were important before combining them into three themes relevant to the Writing Center: linguistic freedom, anti-racism and inclusivity, and safe spaces. With these themes in mind, we drafted a statement and got feedback from other campus organizations. After several revisions, the final EDI statement was published on the UW-Superior website. One major benefit of collaboratively creating our EDI Statement is that it helps us to reflect and prioritize our shared goals and values—plus, it communicates our values and priorities to the entire campus. Our EDI Statement encourages diverse voices and welcomes people of all identities, including those based on neurodiversity, which echoes our mission statement.

Waldschmidt, Maxwell

Institution: *WI - Marquette University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Maxwell Waldschmidt

Abstract Name: **Resilience in LGBTQ+ Catholic Young Adults**

Religiosity and spirituality correlate significantly with well-being, self-esteem, and optimism (Koenig, 2012). However, there is a scarcity of research on this relationship pertaining to lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ+) individuals and the perceived impact of religion and spirituality on their lives. The circumstances LGBTQ+ individuals face are complex, as identity conflict may occur when integrating religious and sexual identities (Gibbs and Goldbach, 2021). Studies have been conducted on resilience in LGBTQ+ young adults and on LGBTQ+ identity formation within Catholicism, but the relationship and interactions among these factors, including implications for practicing faith, have yet to be analyzed. This study endeavors to analyze these topics through a resilience-based lens to understand the co-existence of Catholic and LGBTQ+ identities within young adults. Resilience and sexual identity formation models will be utilized to (1) assess the resilience of LGBTQ+ Catholics, and (2) compare assets and resources present in LGBTQ+ young adults who choose to continue or discontinue practicing Catholicism. Through this research, we hope to shed light on factors involved in LGBTQ+ young adults' choice to continue or discontinue faith practices and to inform family and religious communities in their understanding of the unique faith-based considerations LGBTQ+ individuals face.
Jeremy J. Gibbs & Jeremy T. Goldbach (2021). Religious Identity Dissonance: Understanding How Sexual Minority Adolescents Manage Antihomosexual Religious Messages. Journal of Homosexuality, 68(13), 2189-2213. https://doi.org/10.1080/00918369.2020.1733354
Koenig H. G. (2012). Religion, spirituality, and health: the research and clinical implications. ISRN psychiatry, 2012, 278730. https://doi.org/10.5402/2012/278730

Walker, Benjamin

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Benjamin Walker

Abstract Name: **The Impact of Malnourishment and Oxidative Stress on the Reactivation of the Epstein-Barr Virus in Burkitt lymphoma cells**

The Epstein-Barr virus (EBV) is a herpesvirus, which are known for the ability to switch from a latent to lytic infection in host cells. EBV is estimated to have infected up to 90% of the human population, with many never showing symptoms of infection. After years of latent infection, EBV can reactivate its lytic cycle, which can play a role in some diseases, especially among immunocompromised individuals. The mechanism behind EBV lytic reactivation is not fully understood; however, there are some chemicals known to cause this reactivation. A common reactivator used in experimentation is the compound butyrate, a lipid metabolic regulator produced by gut microflora. This study seeks to determine the extent that chemicals produced during malnutrition and oxidative stress impact EBV reactivation. The compounds sodium 3-hydroxybutyrate and lithium acetoacetate were introduced to infected Burkitt lymphoma cells to see their impact on lytic activation. These compounds are ketone bodies produced during lipid metabolism; done when cells are lacking energy from traditional metabolism of glucose. In addition to providing information on the impact of insufficient nutrition, these compounds are similar in structure to butyrate, so the importance of chemical structure was simultaneously studied. The other cellular stress investigated was oxidative stress. Reactive oxygen species (ROS) were investigated because there is evidence that introduction of these compounds can cause EBV reactivation, so the impact of ROS on EBV reactivation produced by the cells themselves was of interest. EBV reactivation was determined using reverse transcriptase quantitative Polymerase Chain Reaction (RT-qPCR) to measure changes in expression of BZLF1, an early reactivation transcription regulation gene. Oxidative stress was quantified through changes in glutathione proliferator gene expression measured via RT-qPCR.Gaining insight on causes of EBV reactivations supplies targets for EBV reactivation related disease treatments.

Walker, Daniel

Institution: *WI - University of Wisconsin-Stout*

Discipline: History

Author/Contributors:
Daniel Walker

Abstract Name: **Black Robes: God?s Patriots that Prepared America**

The various causes of the American Revolution have been studied by scholars for centuries. The Revolution of 1776 can trace its roots back different sources; however, the role of colonial American pastors, while once studied regularly, has not received the same level of academic attention in recent years. Many pastors in general, and a few in particular, are noted for the direct impact they had on preparing colonial Americans for the American Revolution. The Rev. John Wise, in the late 17th and early 18th centuries, preached sermons against oppressive and usurping royal governance on topics such as taxation without representation is tyranny. These sermon on issues of politics would find renewed interest by the colonists decades later. One of the more famous pastors of colonial America who is well known today is George Whitefield. This pastor traveled the colonies during the First Great Awakening preaching to the colonists on the importance unification, in regard to belief in God, with his Father Abraham sermons. This unification of faith would later extend into the political realm through the creation of a uniquely American identity. A third major figure was the Rev. Jonathan Mayhew, who preached a famous sermon, among many other sermons throughout his life, on submission to government. His sermon on Unlimited Submission paved the way for a colonial population, who were regular church attendees, to have a Biblical basis for their rebellion against the British Crown. These ministers built the foundation for a colonial population to be prepared for a political and military revolution.

Walker, Jaterien

Institution: *GA - Kennesaw State University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Jaterien Walker,
Manohar Murikipudi,
Ibrahima Gueye

Abstract Name: **Vicon sensed Post-stroke rehabilitation exercise assessment using Attention-based CNN**

Cardiovascular diseases are one of the concerning problems in the United States. According to CDC, approximately 805,000 people suffer heart-related problems every year, out of which 605,000 are the first time. Physicians suggest rehabilitation exercises to the surviving patients as these exercises will help the patients in bringing back their physical function and mobility before the injury. Due to recent technology amelioration, many are using Motion Capture Systems to perform the suggested movements. To improve the performance of these sensors, we develop a model that concentrates only on dominant parameters skipping the rest. With the help of optimization techniques and algorithms, built models will identify the critical parameters from the inputted data. We introduce an Attention-based CNN model on 117-dimensional Vicon sensor angle data to enhance the sensor's performance in identifying the performed exercise. Convolutional layers in the network will help extract the input data's in-depth features, and LSTM layers mine the long-time series features. We have used the UI-PRMD - Vicon ten movements data for building the proposed model. Our attention model has outperformed many complex architectures with an overall average of 0.007881 MAD and 0.012343 RMSE for ten movements.

Walker, Josiah

Institution: *VA - James Madison University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Katherine Potocko,
Connor Thepsimuang,
Josiah Walker

Abstract Name: **Investigation of the Effect of Nozzle Temperature on Tensile Strength of Reinforced and Nonreinforced Polypropylene in Fused Filament Fabrication Process**

Fused filament fabrication (FFF), a popular 3D printing method, is increasingly being used to create parts for service rather than simply for form prototypes. A primary advantage of FFF is the short lead time from design to realization of a part; this allows third-party users to quickly make parts for repairs. Commercially available filaments are made of a range of materials, including unreinforced or “neat” polypropylene, bead-reinforced polypropylene, and fiber-reinforced polypropylene. While manufacturers of filament rolls typically provide preferred printer settings (including nozzle temperature) it is valuable to understand the effect of nozzle temperature variation on part strength as well as the tradeoffs incurred with the usage of different polypropylene variants. Furthermore, the most readily available strength data refers to material that has not undergone the FFF process. Having specific information on the tensile strength of polypropylene variants subject to a range of manufacturing conditions will provide valuable design information for those who intend to create service parts from polypropylene via the FFF process.

Walker, Kayla

Institution: *NC - University of North Carolina at Charlotte*

Discipline: **Public Health**

Author/Contributors:
Kayla Walker

Abstract Name: **How Organizational Readiness Can Support Practice Change**

Low-income individuals often experience higher rates of mental health disorders due to various social determinants of health, such as high cost of care, low-quality care, and being uninsured or underinsured. One way to improve mental health outcomes among these populations is to integrate behavioral health services into primary care and public health settings to meet the holistic needs of patients. The Holistic Opportunity Program for Everyone (H.O.P.E.) Initiative is a behavioral health integration initiative launched in 2020 at four Mecklenburg County Public Health clinics. This program aims to more holistically identify and address the physical, nutritional, and behavioral health needs of patients. Integrated care initiatives are not without implementation challenges. Assessing organizational readiness throughout the lifespan of the initiative can be a useful tool to create responsive practice change. To measure readiness for the H.O.P.E. Initiative, the Readiness for Integrated Care Questionnaire (RICQ) was administered 3 years in a row through Qualtrics to assess change in readiness overtime. Program Champion, a readiness subcomponent, is defined within the RICQ as individuals who put organizational weight behind an innovation. Results indicated that the number of self-identified program champions increased from 44% to 89% between 2020 and 2022. In each year, at least one fifth of self-identified program champions were in a leadership role while other roles consistently had staff who did not identify as a program champion. The RICQ can provide useful information across the lifespan of an initiative to drive practice change such as inviting program champions to leadership meetings and the development of a H.O.P.E. Bulletin. By completing the assessment annually, program leadership is able to monitor factors that are facilitating and hindering program success and coordinate efforts to build implementation readiness for the H.O.P.E. Initiative.

Wallace, Brian

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: **FAN Abstract**

Author/Contributors:
Abby Hemmerich *David Durkin* *Nicole Depowski*
Brian Wallace *Chimdimnma Esimai* *George Ude*
Darion A. Isom

Abstract Name: **Panel discussion: Creating a developmental curriculum to build research skills**

In this panel discussion, moderated by Abby Hemmerich, four panel members will share examples of undergraduate research embedded across the curriculum and within individual courses. These examples will highlight principles of research woven through progressive courses in chemistry, psychology, kinesiology, and natural sciences, helping students build skills developmentally from their first year to graduation. David Durkin (co-author, Darion Isom) will discuss a series of integrated labs to grow research skills throughout the middle years of the chemistry major, culminating in an independent, problem-based learning project. Details about the final “Special Project” will be presented; this project requires students to utilize all of their skills to independently design the experiment, request materials, perform of the experiment, and write the research report. Nicole Depowski will present a case study of a psychology program with research introduced at the introductory level, integrated practice across the curriculum, and a capstone senior thesis project. Early exposure to scholarship focuses on locating and reading research, while students gain skills in research ethics and design at the next level. The third year requires use of primary sources, with synthesis and analysis, culminating in a senior thesis project in which students produce their own research. Brian Wallace will discuss the process for building evidence-based practice and research principles into the kinesiology curriculum to prepare students for graduate school or health and fitness professions. Changes to student engagement in research and outcomes related to faculty-mentored research will be discussed.Chimdimnma Esimai (co-author,George Ude) will present a series of course-based research experiences that engage a whole class of students in a research question or problem. Although individual projects are restricted to a single course, students experience multiple opportunities for these projects across the curriculum, providing complementary content and developmental progression in skills.

Waller, Jalila

Institution: *MA - Bridgewater State University*

Discipline: **Communication/Journalism**

Author/Contributors:
Jalila Waller

Abstract Name: **Letting the Narrative Unfold: Black Female Storytellers of the 21st Century.**

In the world of television and film, Black women have not had the chance to be the true visionaries behind the camera and be the star in front of the camera. The purpose of this project is to highlight and analyze the dynamic representations of Black women through the eyes of Black female storytellers, and the impact their storytelling has on women in the Black community. This project focuses on three Black female storytellers, Ava DuVernay, Shonda Rhimes, and Issa Rae, and the work they have created with Black women at the center of those narratives. Some examples of their television work are DuVernay's Queen Sugar (2016-Present), Rhimes' Scandal (2012-2018), and Rae's Insecure (2016-2021). I watched episodes and a film from these creators while taking extensive notes on the plot, character archetypes, dialogue, and cinematography. Furthermore, I read about the role Black female writers and directors have in television and film, representations of Black women, and the culture and identities that shape the way society views Black women. I conducted an auteur analysis and analyzed specific themes and cinematic conventions from the works of each storyteller. So far, I discovered how important it is for Black women to tell their own stories to create a more accurate and well-rounded portrayal of themselves. Many people of color do not see authentic representations of themselves on screen. This project emphasizes the need for all people of color to break more boundaries in controlling all aspects of the narrative to create purposeful and meaningful stories others can relate to and enjoy. I plan to continue my research in the spring of 2023 to further analyze the themes and connections between all three auteurs and their works, and display the unique, compelling, and relatable stories that Black women have to share.

Wallner, Alyssa

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Mathematics**

Author/Contributors:
Alyssa Wallner

Abstract Name: **Categorizing Genetic Disorders via Machine Learning**

Genetic disorders are a prominent concern in society, as they can cause serious health problems. Being able to quickly identify the type of genetic disorder a person has may allow early treatment to minimize the impact of genetic disorders on people's lives. The goal of this project is to develop a model that can predict the type of hereditary disorder a person has using data about their current health indicators and their family's genetic history. I used the statistical programming language R to analyze a simulated data set from Kaggle using machine learning methods such as k-nearest neighbors. I will present results on the accuracy of different multivariable machine learning methods and visualizations that can be used to understand the association between genetic disorders and single-variable predictors.

Walske, Riley

Institution: *WI - University of Wisconsin-River Falls*

Discipline: **Biology**

Author/Contributors:
Elizabeth Erb,
Riley Walske,
Ashley Tuszka,
Michelle DeBoer

Abstract Name: **Evaluating Plasma Vitamin A and E Concentrations in a Mature Horse Herd Housed in a Dry Lot or Pasture**

Vitamin A and E are adequately supplied to horses when they consume fresh pasture. However, horses in the Upper Midwest often become deficient during the winter months which can be detrimental to horse health. Considering the prevalence of deficiency has not been widely documented, this study aims to evaluate plasma vitamin A and E concentrations in the UWRF horse herd related to pasture versus dry lot housing conditions. Twenty-seven mature adult horses were used in the study. Thirteen horses were housed in a dry lot with hay-only access while fourteen horses had pasture access during the summer. All horses had access to a free-choice mineral and vitamin mix. Blood samples were taken in February (winter), May (spring), August (summer), and November (fall) and sent to Michigan State Veterinary Diagnostic Laboratory for analysis. Data were analyzed using PROC MIXED in SAS with significance set at P≤0.05. Adequate vitamin E was classified as 2.0 to 4.0 µg/ml and adequate vitamin A was classified as 175 to 300 ng/ml. In the winter and spring, 70 to 74% of horses were deficient in vitamin E with an average concentration of 1.83 µg/ml. Plasma vitamin E concentrations remained inadequate in dry lot horses in the summer at 1.43 µg/ml (P>0.05) while concentrations rose in pastured horses to 2.4 µg/ml (0.05). When evaluating vitamin A, 81% to 85% were deficient in the winter and spring, respectively, with an average concentration of 145 ng/ml. While pastured horses exhibited an increase in plasma vitamin A in the summer compared to dry lot horses (0.05), 64% of pastured horses remained deficient. These results demonstrate the prevalence of vitamin A and E deficiency in an Upper Midwest horse herd on a hay-only diet.

Walt, Jonah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Music**

Author/Contributors:
Aleah Vincent

Abstract Name: **Equilibrium Quartet presents Keen by Roshanne Etezady**

Equilibrium is a saxophone quartet at the University of Wisconsin-Eau Claire. The quartet was formed in Sepember of 2021 and is composed of undergraduates students, all with different majors: music education, applied instrumental music, integrated strategic communication-advertising, and biology. In our time as a quartet, we have performed in masterclassses, auditioned for competitions, and prepared multiple recitals. As an ensemble, we are interested in exploring timbre, balance, and color within the constraints of saxophone quartet. The saxophone is an incredibly flecible instrument capable of producing a wider range of wounds and colors. Roshanne Etezady's piece,Keenutilizes the saxophone quartet's unique ability to blend into one homogenous sound by leaning on droning characteristics to drive the piece. Etezady also highlights the individual instrument's timbral qualities in solo passages. We chose this piece because it explores a wide range of colors and challenges musicians to maintain consistent blend and balance in the extreme registers and dynamics of the saxophone.We are excited to share the music of Roshanne Etezady, a contemporary classical composer who uses timbre and balance to capture intense emotions in the pieceKeen. To keen means to express grief with a loud and sustained cry of sorrow. Etezady uses the concept of keening to stucture the piece and model the emotional affect of the title. However she goes beyond imitating this human response to grief. The unison drones are contrasted by shifting melodic lines andintense dissonances that further evoke a distressing affect. In our performance, we hope to convey this intense feeling of sorrow and highlight the work of composer,Roshanne Etezady.

Walter, Abigail

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Abigail Walter

Abstract Name: **Exploring College Students' Reports of Help-Seeking Attitudes and Levels of Self-Reliance and Self-Compassion**

Mental health concerns among college students are on the rise, with up to 40% of students reporting mental health conditions such as anxiety and depression. The majority of these students do not seek help, possibly due to barriers (e.g., costs, appointment availability), negative attitudes towards help-seeking, and self-reliance (i.e., dependence on oneself to solve one's problems).Another factor that may be associated with help-seeking is self-compassion. Self-compassion is extending compassion to one's self when experiencing difficulty or inadequacy. While this factor has not been examined within the context of mental health help-seeking, it has been studied within the context of academic coping strategies, specifically one's ability to cope with perceived academic failure. Neff et al. (2005) found that college students who reported higher levels of self-compassion also reported more adaptive strategies for coping with academic failures. Given that help seeking is often an adaptive coping strategy for mental health issues, it is possible that self-compassion is related to mental health help-seeking.The purpose of this study is to explore the relationships among self-reliance, self-compassion, and help-seeking attitudes within mental health and academic contexts. The three research questions are: 1) What are the relationships among college students' reported levels of self-compassion, self-reliance, and help-seeking attitudes? 2) Are these relationships consistent across both academic and mental health help-seeking contexts? And 3) Are there group differences (e.g., sex, ethnicity, class level) in college students' reported levels of self-compassion, self-reliance, and help-seeking attitudes?This study will contribute to our understanding of the factors associated with students' decisions and attitudes surrounding help-seeking.

Walters, Brandon

Institution: *VA - Longwood University*

Discipline: Mathematics

Author/Contributors:
Brandon Walters,
Steven Hoehner,
Jeff Ledford,
Nicolas Freeman,
David Pack

Abstract Name: **Surface Areas of Equifacetal Polytopes Inscribed in the Unit Sphere**

This article is concerned with the problem of placing seven or eight points on the unit sphere S^2 in R^3 so that the surface area of the convex hull of the points is maximized. In each case, the solution is given for convex hulls with congruent isosceles or congruent equilateral triangular facets.

Walters, Teel

Institution: *TN - Belmont University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Teel Walters,
Husna Nabi,
Jordyn Wilcox,
Davon Ferrara

Abstract Name: **The Toxicological Effects of Duloxetine as a Polymeric Nanoparticle Drug Delivery System in Rats**

Duloxetine (Cymbalta), a serotonin-norepinephrine reuptake inhibitor (SNRI) is an antidepressant which has previously shown relatively low negative toxicological effects and promising depressive symptom management. However, Duloxetine (DLX) encounters an issue in its drug delivery performance due to its high metabolic dissolution rate which can influence both potency and efficacy. Nanoparticles, in particular, Solid Lipid Nanoparticles (SLNs) can be used as an effective drug carrier system for DLX. If DLX is paired with a SLN (SLN-DLX) for depression treatment, it could provide a relatively low toxicity effect while increasing the concentration of the drug's potency in particular to the brainstem and 5-HT terminal areas. While using nano-template engineering techniques, SLN-DLX solutions were fabricated to be further analyzed for toxicological analysis in a rodent model. Equal numbers of 3-month-old male and female Long-Evans Rats received daily 10 mL/kg intraperitoneal (IP) injections of either 5 mg/kg DLX, 5 mg/kg SLN-DLX, SLN, or saline vehicle on four consecutive days. General physical appearance and daily weights were recorded during treatment. Rats were euthanized and brains collected and post-fixed in paraformaldehyde on the fifth experimental day for further histological analysis. We hypothesized that rats with SLN injections and SLN-DLX injections will exhibit no toxicological differences when compared to the saline group. There was no significant effect on weight in any treatment group, p > .05. Histological analyses are forthcoming, but we hypothesize that there will be no significant toxicological difference between treatment groups. For future directions, we hope to conduct a study looking into behavioral differences in chronic stress induced rodent models from the same administration of treatments.

Walton, Jarrett

Institution: *MD - Salisbury University*

Discipline: History

Author/Contributors:
Jarrett Walton

Abstract Name: **Policies at the Tudor Court: The Change and Development in policy under Henry VII and Henry VIII from 1500-1540**

Policy in England during the Tudor era, especially during the reigns of Henry VII and Henry VIII were shifting constantly and based on the Government structure, Marriages, Friends executed, and councilmembers abusing power, there were always changes to the policies of the country. This will also focus on nobles and their impact, or their presence at court and their home region creating a situation where England was able to be forced to alter their stance permanently from the status quo of the past. Henry VII and the establishment of most policies and setting the base for change. In the earlier years, Cardinal Wolsey and Charles Brandon were influencing Henry VIII. Once Wolsey had fallen out of favor Thomas More is next followed by Thomas Cromwell both focusing on religion In their own way based off their own views. When focusing on policies of religion, I will contrast the churches stances against Henry and those who in the country were for and against the policy. I will also be able to show who pushed and made the changes happen over the full reign of Henry VIII and those who moved to stop the shift from the government and gentry. I will then move to the people who were able to squeeze their way into the inner circle and support or not support policies to help determine what would play out. Overall, the project will provide an insight into the greater aspects of how domestic policy changed over the reigns of Henry VII and Henry VIII through both religious conflicts and power struggles by those who wished to usurp the throne, and how the stage was set for his on and daughters when they came to the throne.

Walts, James

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
James Walts *Nicole Riddle*

Abstract Name: **Mimicking Permanent Phosphorylation of HP1a in Drosophila melanogaster Causes Sterility**

The Heterochromatin protein 1 (HP1) family are non-histone chromosomal proteins that are key factors in the formation of heterochromatin and in transcriptional regulation. HP1 proteins are found in many eukaryotic organisms including plants, animals, and fungi. HP1a fromD. melanogaster was the first HP1 protein discovered, and it has been intensively studies for more than three decades. HP1a can act both as a repressor and an activator of transcription. Like many other proteins, HP1a undergoes post-translational modifications such as phosphorylation. However, little is known about the functions of HP1 post-translational modification, including phosphorylation. To advance our understanding of HP1a's post-translational modifications, we produced two HP1a mutants that either mimic or block phosphorylation. Specifically, we replaced serines (S) 88/89/91 (S88/89/91) either with glutamic acid (E) to mimic permanent phosphorylation or with alanine (A) block phosphorylation. Using these mutant strains, we investigated how phosphorylation of HP1a impacts its known functions. Western blot analysis demonstrated that the phospho-mimic HP1a protein is stable and accumulates to similar levels as wildtype HP1a. Polytene chromosome analysis indicated that the phospho-mimic HP1a protein continues to localize to heterochromatic regions of the genome, including the centromeres and telomeres. On the organismal level, we found that homozygous phospho-mimic HP1a mutants have a significant reduction in fertility for both males and females compared to heterozygous and wildtype animals. We observed a significant decrease in ovary size for the homozygous phospho-mimic HP1a mutant females when compared to heterozygous and wildtype animals. Parallel experiments with the HP1a phospho-block mutant strain are ongoing. Overall, our results show a significant fertility decrease, possibly due to the decreased ovary size in homozygous mutants, but no disturbance of HP1a localization on polytene chromosomes. These results suggest that phosphorylation of HP1a proteins at the site we modified (S88/89/91) might have specific functions in the Drosophila germline.

Wang, Ivy

Institution: *CA - California State Polytechnic University - Pomona*

Discipline: Chemistry/Materials Science

Author/Contributors:
Ivy Wang,
Alex John

Abstract Name: **Ligand effects in molybdenum catalyzed oxidation of benzylic alcohols**

Conventional reagents used in alcohol oxidation reactions pose severe economic and environmental consequences. Nevertheless, such reagents are heavily relied upon due to the fundamental role of alcohol oxidations in the chemical processes used by various industries, such as the pharmaceutical and biofuel industries. With sustainability in mind, this project intends to evaluate alternative methods of alcohol oxidation using novel dioxomolybdenum catalysts. Due to a lack of literature surrounding molybdenum catalyzed alcohol oxidations, the role of each component will be thoroughly investigated through the evaluation of a diverse range of alcohols including primary and secondary benzylic as well as aliphatic alcohols in oxidation reactions. A comprehensive understanding of ligand effects in the context of these oxidations will also be developed. Under our optimized conditions, the oxidations can be achieved over a 24-hour reaction time at 120°C using 2 mol% molybdenum catalyst in dimethyl sulfoxide, which acts as both the solvent and the oxidizing agent. As a result, the conversions and yields in these catalytic alcohol oxidation reactions vary from 20% to 99% based on the alcohol substrate used, and there is an evident efficiency linked with the use of the novel catalysts. The reaction is chemoselective and yields aldehyde as the sole oxidation product from primary alcohol substrates. A competing dehydration pathway has been observed with certain electron-rich benzylic alcohols, resulting in the formation of corresponding olefins. With further optimization, these catalysts can be assessed for large-scale industry applications with the goal of pushing industrial processes to become more environmentally friendly.

Wang, Lufan

Institution: ***FL - Florida International University***

Discipline: FAN Abstract

Author/Contributors:
Lufan Wang,
Zhuoxuan Li

Abstract Name: Case Studies for Constructivism Learning Theory-Based Academic Research Education

Academic research experience has been widely acknowledged as an effective active learning method to enhance student learning outcomes. Most research universities provide research opportunities for advancing the professional and personal development of their undergraduate students. Some programs even require undergraduate research as part of the bachelor's degree. However, there is a lack of theoretical framework guiding academic research education due to its open-ended context, and its requirement for creativity, exploration skills, and domain knowledge. To address this knowledge gap, in this study, we proposed a pedagogical framework for academic research education based on constructivism learning theory. The framework includes 3-round pre-session evaluations and 12 one-on-one advisory sessions. Each student is working on an individual research project that is designed to best suit their interests. Students are the lead of the projects, while the role of their research mentors are facilitators and coach. We applied the proposed research education methodologies to 90 students, including 78 high school students ranging from Grade 9-12 and 12 undergraduate and graduate students. The project completion rate is 92.3% for high school students, and 83.3% for undergraduate students. All the students have reflected that the research experience has efficiently advanced their critical thinking, problem solving, systematic exploration, and academic communication skills. With the holistic development brought by the research training, 80% of the high school students have successfully got into Top 30 institutions in college application. These results indicate the effectiveness of the proposed methodology, and in future work, the authors plan to further propagate the method to more students.

Wang, Sitong

Institution: ***IA - Iowa State University***

Discipline: Architectural and Interior Design

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Sitong Wang,
Jorge Nunez

Abstract Name: Low-Carbon Footprint Concrete for 3D Printed Buildings

3D printing concrete has recently emerged as a revolutionary technology. Over the past two decades, developments in the technology have allowed a wide variety of applications, e.g., the fabrication of buildings. Cement manufacturing accounts for approximately 5% of anthropogenic CO2 emissions worldwide. The carbon footprint created from concrete is unsustainable for the environment. New forms of concrete containing alternative materials such as waste products and bio-aggregates are being implemented to reduce the overall carbon footprint. In our research, we are testing various mixes of concrete containing shredded wind turbine fibers, recycled glass powder, corn stover, and biochar. These materials were chosen as they provided a balance of strength, workability with the 3D concrete printer, and lower carbon emissions. To test our mixtures, we developed the following workflow: mix, cure, test, and evaluate. Each concrete mixture contained varying mix ratios of cement, sand, water, and one of the alternative materials. To ensure proper test results, we made 4 test mixtures containing 3 specimens for each material. This resulted in a total of 12 specimens for each material. Each specimen was cured for 28 days under water. After curing, we tested the compressive strength of each specimen on a hydraulic press machine and analyzed measurements of the load and stress. We then calculated the carbon footprint of the concrete mix with each alternative material. This data allowed us to analyze the mixtures and determine the most suitable candidate for 3D concrete printing. The new concrete mixes showed a varying level of compressive strength and showed a noticeable reduction in carbon footprint compared to the standard concrete mix. The technology of 3D concrete printing in combination with eco-friendly concrete will lay the foundation for a more sustainable future for housing.

Wang, Xinyue

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Xinyue Wang,
Yi Zhang,
Boang Liu

Abstract Name: **Automated Cryptocurrency Trading Strategies Based on Market Signal and Deep Learning Approach**

Digital cryptocurrency first emerged in 2009 and is a currently thriving open-source community and payment network. Its ecosystem is gaining lots of attention from business, consumers and investors. In this paper, we replicated the trading strategies that have been developed for the stock market and back testedthese strategies on five different cryptocurrencies' (Bitcoin, ETH, USDT, USDC and BNB)historicaltrading data. We also developed an automatic effective trading strategy based on the short-term price prediction using the Deep Learning approach to maximize the total return.In the end, we concluded with the annualized performance return, sensitivity and reliability of the proposed trading strategies.

Wangen, Kevin

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Kevin Wangen *Kelly Koerber* *Darby Schabacker*
Autumn Sivilay *Akagaonye Torti* *Joe Hupy*
Nathan Rose *Patricia Cleary*

Abstract Name: **Evaluation of Marine Layer Characteristics at a Lake Michigan Shoreline Impacted by High Ozone**

The Wisconsin's Dynamic Influence of Shoreline Circulation on Ozone (WiscoDISCO) campaign involved obtaining atmospheric measurements to create a model of atmospheric layering of a shoreline environment impacted by high concentrations of ozone. The 2022 field campaign ran from June 19 - 24, 2022. The Uncrewed Arial Systems (UAS) utilized in this campaign were two DJI M300 multirotor copters each equipped with a Personal Ozone Monitor (POM) and an iMET sensor. UAS were flown at a Lake Michigan shoreline in southeastern Wisconsin to obtain simultaneous overwater and overland measurements of air temperature, relative humidity, ozone concentration, and wind speed and direction. Measurements from WiscoDISCO-2022 were used to characterize the marine layer during lake breeze circulation using identifiers of atmospheric inversion. The field campaign captured atmospheric measurements during a total of 52 flights, 34 over land and 18 over water consisting of a vertical ascent from a fixed location. All overwater flights correspond to simultaneous overland flight. The presence of an over land internal boundary layer underneath an inverted marine layer was observed during most lake breeze events, where over water inversion extended to the near-lake surface. Calibrations on the ozone monitor were done on every other flight each day using a transfer standard and all ozone readings of the POM were adjusted to these calibration results. Observed differences in simultaneous observations of marine layer dimensions and ozone will be discussed.

Warkentine, Johnna

Institution: *KY - University of Kentucky*

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
Johnna Warkentine

Abstract Name: **The Persistence of Memory in Other Mediums: Creating a Digital Audio Archive of Anastasia Tsvetaeva**

In March 2022, the University of Kentucky Libraries received a donation of books, papers, artifacts and archival materials concerning the Russian writers Marina (1892-1941) and Anastasia (1894-1993). These materials were donated by Uli Zislin, the 92-year-old Jewish Russian-American curator of the Washington Museum of Russian Poetry and Music, located in Washington, DC. Among the two dozen boxes of donated materials is a set of VHS tapes of interviews and literary events that Zislin filmed in Russia in the late 1990s. In this presentation, I explore the background and content of the materials as well as offer an overview of the software and methodology I used with the audio-visual materials to catalog and annotate them as well as make them legible to researchers. In my paper, I explore the personality and style of the videographer, Uli Zislin, through the layers of memory captured within the specific video materials, consisting of event recordings and oral histories by Anastasia Tsvetaeva's contemporaries and enthusiasts, as well as through the narrative construction of the materials. Using Michael Frisch's concept of "shared authority," I analyze the performance of memory in space, oral history and video editing to demonstrate how such materials offer avenues for new insights into the practice of recovering literary memory during the early years of post-Soviet Russia.

Warnke, Sarah

Institution: *MT - Montana State University*

Discipline: Public Health

Author/Contributors:
Sarah Warnke,
Margaret Eggers

Abstract Name: **Cumulative Health Risk Assessment of Drinking Water Contaminants in Cascade and Lewis and Clark Counties, MT**

Lifetime consumption of water with unsafe levels of certain contaminants can negatively impact one's health. The levels of these contaminants in Montana water sources are not easily accessible to the public. The goal of this research is to calculate and create awareness of the cumulative risk from consuming the groundwater and stream water in Cascade and in Lewis and Clark counties, Montana. It is hypothesized that the average cumulative risk for each of the six observed watersheds is above 1.0, and hence unsafe for lifetime consumption.The water quality data were obtained from the Montana Ground Water Information Center (GWIC) which is managed by the Montana Bureau of Mines and Geology. Data for each of the HUC-8 level watersheds in the two counties of interest were downloaded from the GWIC website then were cleaned and analyzed in Excel. R studio was used to visualize the water quality data.The cumulative risk values for wells were calculated based on the sum of the ratios of each contaminant's average in relation to the respective EPA health standards, the values exceed the 1.0 safety benchmark in all six watersheds: Smith 1.98, Upper Missouri 1.98, Sun River 6.58, Blackfoot 1.41, Belt 3.37, and Upper Missouri-Dearborn 32.68. Many contaminants were above the recommended safe level, such as arsenic, nitrate, cadmium, and strontium. Exposure to these contaminants over an extended period can result in many negative health effects including increased risks of cancer, liver damage, etc.Up to date and accessible information on the water quality is important to the health and wellbeing of a community. We are meeting with the Health Departments in Cascade and in Lewis and Clark Counties to share results and discuss how we can support increased home well testing in their communities.

Wasfy, Dana

Institution: ***EGY - The American University in Cairo***

Discipline: Psychology/Neuroscience

Author/Contributors:
Maya Shehata,
Mariam Alaa,
Dana Wasfy,
Kene Uwajeh

Abstract Name: Conformity and Friendship Satisfaction Among University Students

The rhetoric around one's role in a friendship or relationship is largely shaping up to promote a lack of conformity. Adolescents and young adults are now regularly told to "stand out" and perhaps that fitting in isn't always the best option. This, however, prompts the question of what role conformity plays in impacting friendship satisfaction. This paper explores whether there's a correlation between an individual's level of conformity and their level of friendship satisfaction. Gender and relationship status are explored as potential mediators in this relationship. The participants' level of conformity was measured using the Elevator experiment, where participants enter an elevator and find 4 other people facing the rear end of the elevator. Participants accordingly make one of three decisions, they either turn and face the rear end (conformity), continue standing the same way (non-conformity), or hesitate (mid-level conformity). Participants then completed a questionnaire that assesses their level of platonic friendship satisfaction across three scales. This process was completed 75 times by participants, with 25 students conforming, 25 not conforming, and 25 mid. Results of the Anova show that there is no significant correlation between conformity and friendship satisfaction; however, there was a significant correlation between gender and friendship satisfaction, which indicated that girls are overall more content with their friendships. This opens lots of areas for future research, as it can be worthwhile to explore some of the other factors that result in girls being more satisfied with their friendships at this specific age.

Wasson, Alexia

Institution: ***CA - University of California - Merced***

Discipline: Sociology

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Alexia Wasson,
Lily Lindros

Abstract Name: Blockbusting and Racial Transition in Washington, D.C.

Blockbusting is the intentional action of one or more real estate agents to provoke white flight and fear in a previously racially homogeneous area, in order to sell properties for high profit to racialized minority groups. There is limited research on the causation of blockbusting, its distinguishing factors, and the living conditions in these neighborhoods. Our research aims to address these through a case study of Petworth, Washington, D.C., a neighborhood which underwent significant racial transition between 1950 and 1970, showcasing examples of possible instances of blockbusting and its mechanisms and key actors. Based on previous indications of blockbusting researched in the same area, our analyses explore the mechanisms of racial transition and possible blockbusting in Washington, D.C. and its impact on neighborhood disparities. While previous literature has often reinforced a dichotomous argument of either a structural model of racial transition (for example, invasion and succession) or an agent-based narrative (focusing on the influence of both white and Black individuals involved in blockbusting), this case study explores the circumstances which directly affected the racial transition and subsequent disinvestment of Petworth while bridging previous methodologies to provide a greater understanding of blockbusting as a practice. This is accomplished through a mixed analysis of both quantitative profit and loss statistics in home sales as well as individual narratives from oral histories. Oral histories from Washington D.C. residents are analyzed to examine blockbusting on a more personal level rather than at a group level. The sources come from three different oral history archives alongside property records from the Office of Tax and Revenue's (OTR) real property tax database. Preliminary results find repeating instances of likely motives for blockbusting as well as a complex story of profit and loss by potential blockbusters.

Watkin, Alexa

Institution: *MI - Hope College*

Discipline: History

Author/Contributors:
Alexa Watkin

Abstract Name: **The impact that former American Missionary children had on the 1898 annexation of Hawaii**

In the mid to late nineteenth century, Hawaii underwent a series of political events that resulted in the 1898 annexation by the United States Government which was instigated by American politicians and businessmen who had grown up in Hawaii as the children of American missionaries. Three of the most prominent actors included are Lorrin A. Thurston, Sanford Dole, and Albert F. Judd. Through analyzing a series of political and personal documents written by key figures of the annexation movement it can be seen that their intimate understanding of Hawaiian culture and the prestigious positions trusted to them because of their unique place in society allowed these individuals' leverage against the monarchy in crucial moments. These individuals are largely responsible for the annexation of Hawaii and their background as the children of American missionaries was the most significant common variable.

Watry, William

Institution: *WI - University of Wisconsin-Stevens Point*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Abby Mueller,
Amber Smith,
Cece Giesen,
Ben Schutt,
Hayden Walkush,
William Watry,
Alayna Reynolds,
Cady Sartini

Abstract Name: **Home Range and Habitat Selection of Rehabilitated and Released Female Black Bears in Northern Wisconsin**

The Eastern American Black Bear (Ursus americanus americanus) is a valued species among many for its biological, intrinsic, and cultural significance. Black bears are considered habitat generalists, taking advantage of the resources available to them. In the state of Wisconsin, previous studies suggest black bears select for habitats in northern hardwood forests and near beaver flowages. Habitat selection data from rehabilitated and released bears is lacking in Wisconsin, although this is a practiced management technique. The purpose of our study is to investigate the home range and habitat selection of rehabilitated and released female black bears in northern Wisconsin. The rehabilitated yearlings are fixed with GPS radio-collars prior to release, and location data is received every four hours. Habitat data from the received GPS points are compared to habitat data from random locations within the bears' home range (third-order analysis). Habitat data such as landcover type and distance to nearest road, stream, and open water source is collected. Understanding habitat selection of rehabilitated black bears in comparison to previously known black bear selection behavior is important for determining the impacts of rehabilitation and release as a management technique.

Watson, Alissa

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Samantha Krueger

Abstract Name: **Paleontology of Faunas from Initial Transgression to Deep Marine, Cretaceous (Albian) of Central Texas.**

The Early Cretaceous (Albian, 100-113 million years old) Walnut Formation crops out in the low valleys of the Lampasas Cut Plain in Central Texas. The Walnut records the transition from nonmarine into fully marine conditions with various lithologies of limestone, marls and shales, and is extremely fossiliferous, dominated by Bivalves, gastropods, Echinoids and Cephalopods. The succeeding stratigraphic Members of the formation contain distinct faunas: 1) the basal Bull Creek Member contains a low species richness, low evenness fauna dominated by the large gastropod, Peruviella dolium; 2) the Cedar Park Member contains an ichnofauna of arthropod burrows representing a tidal flat paleoenvironment; 3) the Keys Valley Marl Member contains both a high species richness fauna dominated by the ammonites Oxytropidoceras salasi and Engonoceras pierdenale and an oyster biostrome of Texigryphaea mucronata and 4; the Upper Marl Member is dominated by the bivalves Protocardia multistriata and Homomya bravoensis. Gastropods are abundant throughout all Members, and include several possible new species at the top of the formation. Overlying the Walnut, the wavy-bedded limestones of the Comanche Peak Formation contain a similar, open-marine fauna. Expected results will include multiple diversity indices and size-frequency histograms for dominant species at all fossiliferous horizons.

Watson, Lee

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tiffany Paalman,
Sam Frauenfeld,
Christopher Santiago,
Natalie Ford,
Lee Watson,
Ian Leiker

Abstract Name: **The effects of restoration projects on phosphorus concentrations throughout Manitowoc County streams and Lake Michigan**

Phosphorus poses an ongoing challenge to Lake Michigan. Excess levels cause algae blooms resulting in degraded water quality in near-shore waters. As local tributaries serve as important phosphorus sources to Lake Michigan, we analyzed phosphorus levels in two streams in Manitowoc County, WI—Centerville Creek and the Little Manitowoc River. These streams have historically exceeded Wisconsin DNR surface water phosphorus standards of 0.075 mg/l phosphorus. Each stream has undergone restoration near where they enter Lake Michigan in order to slow stream flow and reduce phosphorus loading into Lake Michigan.Each creek showed a different trend in phosphorus concentration along its length.Centerville Creek showed lower phosphorus concentrations within the restoration area compared to the upstream branches, although all significantly exceeded the WDNR threshold. North branch averaged 0.510 mg/L phosphorus, and the south branch averaged 0.430 mg/L.Sites within the restoration project averaged 0.307 mg/L. In contrast, no difference in phosphorus concentration was noted between the upstream and restoration sites in the Little Manitowoc River.This may be because this restoration was more recently completed (2020 vs 2012), or due to the surrounding land use as the Little Manitowoc River runs through the city of Manitowoc, while Centerville Creek goes through agricultural land.However, overall concentrations across the Little Manitowoc River were lower than any of the Centerville sites, with an average concentration of 0.071 mg/L, below the WDNR threshold, and rain events did not increase phosphorus as much as in Centerville Creek. Future work will focus on identifying future sources as

Watwood, Kendal

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Biology

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Joshua Bowers *Sydney Covert* *Kassidy Detvan*
Danielle Dolinac *Pedro Hrubecky* *Will Inghram*
Mariah Linse *Oliver Long* *Austin Skenadore*
Sam Troudt *Catherine Washak* *David Krause*

Abstract Name: **Physiological Changes in Dienococcus aquaticus During Long-Term Stationary Phase Under Carbon Source Availability Stress**

There is a complicated interaction between a bacterium and its environment driving adaptation. Usually, bacterial physiology is studied during the exponential phase, but investigations during the long-term stationary phase are not as well understood. Here, we followed two strains ofDeinococcus aquaticus in the long-term stationary phase in low and high-nutrient environments. The evolutionary trajectory was assessed through surveillance of cell viability, colony morphology, genomic content, and protein content over 54 days at three time points. We predicted that nutrient depletion and waste accumulation in the flask environment would result in phenotypic variation. Interestingly, there was an environmental shift toward a basic pH. Despite the shift in pH, cultures remained viable after 54 days. Differences among strains were observed in generation time, pigmentation, and colony morphology, among other phenotypic and metabolic characteristics. Divergence in extracellular protease activity was also observed throughout the study. Significant variation between samples equally subjected to the same growth conditions suggested thatD. aquaticusis capable of short-term evolution under resource-scarce conditions.Our findings suggest that further research to evaluate variation in proteins as a carbon source is warranted.

Weaver, Alexx

Institution: *AR - Arkansas State University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alexx Weaver,
Sepideh Mohammadhosseinpour,
Dr. Fabricio Medina-Bolivar

Abstract Name: **Prenylated Stilbenoid Arachidin-1 Increases Effectiveness of Paclitaxel in Triple Negative Breast Cancer**

Triple-negative breast cancer (TNBC) is one of the deadliest forms of breast cancer. Investigating alternative therapies to increase survival rates for this disease is essential. Plant natural products, such as the prenylated stilbenoid arachidin-1 (A-1) from peanut, have shown cytotoxicity to certain cancer cells. The goal of this study was to examine the apoptotic effects of A-1 in TNBC cell lines MDA-MB-231; MDA-MB-436 as well as investigating the impacts of A-1 as an adjuvant for the popular chemotherapy drug, paclitaxel (Pac). The apoptosis induction capability of A-1 and Pac treatment in TNBC cells was evaluated through measuring the activation of key apoptosis proteins via western blotting. Flow cytometry was used to detect apoptosis and cell cycle arrest in the A-1-treated cells. Additionally, TNBC cells were treated with specific concentrations of A-1and/or Pac for 24 h and apoptosis induction was observed by Annexin V-FITC/PI staining and flow cytometry. Results showed a dose-dependent increase in levels of cleaved PARP and cleaved caspase-9; additionally, the amount of survivin, an apoptosis inhibitor protein, decreased at increased A-1 concentrations. This indicates an A-1 dose-dependent intrinsic apoptosis increase in treated TNBC cells. In addition, flow cytometry assays showed cell cycle arrest in G2/M phase and induction of apoptosis in treated cells. Cells treated with the combination of A-1; Pac showed a statistically significant, dose-dependent increase of early apoptosis induction. This research accentuates the importance of further understanding the effects of stilbenoids as an adjuvant treatment for TNBC. In future research, we will apply these methods to a spheroid model to observe the effects of A-1; Pac treatment within the tumor-like microenvironment.

Weaver, Caitlin

Institution: *PA - Susquehanna University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Nicole Andregic ,
Caitlin Weaver

Abstract Name: **Determining Interactions between Neurotransmitters and DNA Sequences Associated with Neurodegenerative Diseases**

The interaction of various neurotransmitters with G-rich DNA sequences was analyzed to understand its role in the associated neurodegenerative disease. The neurotransmitter may promote or inhibit the formation of quadruplex DNA in G-rich sequences, which may affect disease pathology. Additionally, the binding of the neurotransmitter may be concentration dependent or dependent on the presence of a monovalent cation. The interaction of four DNA sequences, NOP56 5'-(GCG CTG)-3', CSTB promoter 1 5'-(CGG GGC GGG GCG)-3', PRNP 5'-(CCT CAT GGT GGT GGC TGG GGG CAG)-3' and c-myc 5'-(TGA GGG TGG GTA GGG TGG GTA)-3'were separately studied with the neurotransmitters tryptophol, melatonin, serotonin, and dopamine. Fluorescence spectroscopy, DNA melting, molecular docking and surface enhanced Raman spectroscopy (SERS) were used to study the interactions. Dopamine promoted the formation of quadruplex in CSTB and c-myc but inhibited it in NOP56. The DNA sequences NOP56 and CSTB only formed quadruplex with melatonin in the presence of potassium ions. Melatonin promoted quadruplex formation with c-myc. Serotonin promoted the formation of quadruplex DNA in NOP56, CSTB, and c-myc. Tryptophol inhibited the formation of quadruplex DNA in NOP56 and CSTB samples, but c-myc formed quadruplex with or without tryptophol and potassium ions. PRNP did not form quadruplex even after the addition of each neurotransmitter. The SERS data showed a vibrational signature, that was dependent on DNA concentration. Further analysis will be completed to determine how these disscovered interactions can affect the progression and characteristics of the respective diseases.

Weaver, Sierra

Institution: *PA - Messiah University*

Discipline: Biology

Author/Contributors:
Sierra Weaver

Abstract Name: **Teaching Sexual Education to Adolescents as a Single Father**

Single fathers face the unique challenge of having the responsibility to provide their child with a sexual education without the help of a partner. This paper examines the single-parent family dynamic and parenting roles through a family systems perspective. Risk factors for single fathers not giving their child a comprehensive sexual education include discomfort talking about sexual topics, uncertainty about adolescent developmental needs, and traditional gender role expectations. However, fathers may overcome these barriers if they feel the responsibility of talking to their child about sex, feel well-educated on the developmental stage of their child, and are able to share their experience with families in similar situations. The importance of sexual education for adolescents, and how single fathers would like to be helped throughout this journey, will also be highlighted in this paper. When educated and supported, single fathers can be equipped to give their child a sex education that can allow adolescents to make healthy and safe decisions in the future.

Webb, Elias

Institution: *WI - Chippewa Valley Technical College*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Elias Webb
Matt Lesch
Kate Czekalski
Sam Denzine
Garth Davis
Colton Gores
Jose Corona Acosta
Lisa Burns

Abstract Name: **Flexible Finger Design for Robotic Gripper**

In industry, the safety and productivity of collaborative robots make them a vital part of many pick and place applications in production. Collaborative robots offer many advantages including their flexibility. In keeping with the advantages of collaborative robots, this flexibility should be extended to the grippers and fingers to reflect human-like dexterity. Flexible fingers have several advantages over traditional, rigid grippers. Adaptive fingers can pick and place a much broader array of oddly shaped objects than traditional grippers. Flexible fingers are also advantageous when working with fragile objects, such as produce, as the gripping force can be distributed by the flexing of the finger.The purpose of this project was to design, optimize, build and evaluate flexible fingers which can be mounted to a Schunk gripper on the end of a Fanuc collaborative robotic arm. Flexible fingers were designed in SolidWorks to integrate with the robotic gripper assembly. By testing prototypes, aspects were identified to improve the flexibility and functionality of the gripper. Using DOE (Design of Experiment) as an optimization strategy, the effects of each variable such as material, wall thickness, infill, etc. was studied. Mechanical simulators were used to isolate and test these variables to see their effects on the system with realistic situational constraints.The manufacturing of the flexible fingers consisted of using SLA and FDM printing to test, compare, and combine the more promising features into a robust finished product, capable of gripping and lifting various objects.Using technologies such as CAD, additive manufacturing, and agile engineering methodologies; it was possible to accomplish the design process and optimize the finger design in a collaborative manner.

Webber, Madeline

Institution: *OH - Miami University*

Discipline: Communication Science and Disorders

Author/Contributors:
Madeline Webber,
Christopher Beer,
Norman Lee

Abstract Name: **The Effect of Ambient Noise Within A Vehicle on the Audibility of Safety Sirens**

Reaction time while driving is crucial, and even one second can be the difference between life and death. As safety vehicles use sirens to alert civilians, the ability of the public to respond appropriately to such signals will depend on the audibility of sirens. This project aims to evaluate the impacts of sound dampening from the inside of vehicles on the audibility of safety sirens (police car/ambulance/fire truck) in the presence of varying levels of auditory stimuli or in the absence of such stimuli. These questions are crucial to public safety as more than 90% of people listen to some sort of auditory stimuli, such as music, while driving. In fact, my initial findings have demonstrated that sound intensity levels were reduced by more than half in terms of relative decibel level outside the vehicle, even without any ambient noise present within the vehicle (a baseline was established by measuring the output of the siren at the safety vehicle to find what level the signal is emitted at). When drivers can't hear emergency sirens, they can't properly react to them; thus endangering both themselves and the emergency personnel. Future steps is to quantify siren intensity levels in terms of the A-weighted decibels (dBA - measure of sound intensity relevant to human hearing) and to determine how different sound frequencies (hertz) of each safety siren attenuate various distances. Results will then be compared with various sound levels inside the vehicle to determine the minimum masking value. Findings will be discussed in terms of the effectiveness of sirens in alerting drivers in the presence of ambient noise, and hope to suggest how drivers may be better alerted to the presence of sirens. This research not only aims to benefit the field of audiology, but the safety of the public as well.

Weber, Evan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Evan Weber,
Dr. Robert Lodge

Abstract Name: **U/Pb Geochronology and Zircon Trace Element Geochemistry of the Pembine-Wausau and Marshfield Terranes of the Proterozoic Penokean Orogen, Wisconsin**

This study presents new U/Pb and trace element data from zircons obtained from volcanic and intrusive rocks from the Pembine-Wausau and Marshfield terranes of the Paleoproterozoic (1.8-1.9Ga) Penokean Orogen in northern Wisconsin. This terrane is best known for hosting almost 150 Mt of volcanogenic massive sulfide (VMS) mineralization. However, challenging socio-political obstacles preventing mining and exploration activities coupled with extensive overlying Paleozoic and Quaternary deposits has limited the study of the terrane. The current need for critical minerals highlights the importance of improving our understanding of this underexplored and poorly exposed orogen. This study aims to improve regional tectonic and metallogenic models for base and precious metal exploration. Samples were collected from within the Ladysmith-Rhinelander and Eau Claire volcanic belts, and zircons from these samples were then analyzed at Laurentian University (Sudbury, Ontario, Canada) via Split-Stream Laser Ablation Inductively Coupled Plasma Mass Spectrometer (LASS-ICP-MS) to obtain radiogenic isotopic, and trace element data. Preliminary results reveal complex age relationships and basement architectures that were previously unrecognized. The samples obtained from the Eisenbrey deposit within the Ladysmith-Rhinelander belt temporally correlate with felsic rocks from the Back Forty deposit in Michigan supporting a recently recognized wide-spread younger VMS forming event. Samples from the Lynne deposit reveal the presence of a co-eval subvolcanic intrusion in the presence of Archean basement, but the distribution of this older basement is poorly constrained. Samples from the Eau Claire volcanic complex reveal ages that correlate with other VMS-forming strata across the Pembine-Wausau terrane, but do not show evidence of older basement rock despite existing models. Therefore, tectonic models for the development of the Penokean Orogen and the formation of VMS deposits need to be revisited.

Weber, Grace

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Communication Science and Disorders

Author/Contributors:
Kendra Ames,
Grace Weber

Abstract Name: **Do You See Your Bias? An Accent Perception Study**

Accents are an important social stimulus that influence how we form groups and interact with others. The purpose of our study is to identify variables that influence accent perception. Meltem et al. (2019) found that demographic categories such as gender, skin color, and physical features can influence accent perception. English speakers listened to recordings from non-native English speakers presented with different images and rated their accent in a Qualtrics survey on a scale from 0-10 (following Cal State LA and the University of Wisconsin-Whitewater's IRB guidelines). They answered demographic and language background questions. A one-way repeated measures analysis of variance was conducted to identify differences between the ratings for each image. A statistical significant difference between conditions was found. The results indicate that visual stimuli have an effect on accent perception; foreign accent ratings were higher when a Latinx person was presented with the audio. These results show how physical traits influence accent perception, therefore accent should be understood as a bidirectional relationship between the speaker and listener.

Webster, Alex

Institution: *TN - Trevecca Nazarene University*

Discipline: Nursing/Health Science

Author/Contributors:
Alex Webster,
Tracy Roy

Abstract Name: **Compression and Contact of The Glenohumeral joint; a Cadaveric Study Comparing Angles of Internal and External Rotation**

Previous research has indicated that immobilization in external rotation for shoulder dislocation may reduce the recurrence rates of dislocation and instability of the Glenohumeral Joint (GHJ). The purpose of this research is to calculate the extent to which the humeral head is in contact with the glenoid fossa and the amount of pressure it applies in various positions of immobilization while comparing it to geometric analysis calculations. To accomplish this, we will be performing cadaver-based research using manipulation of the joint position as the primary independent variable. The joint will be positioned between 50° and 60° of internal rotation accompanied with adduction of the arm for the internal rotation measurements. For the external rotation portion, we will be measuring in multiple angles from 0° to 45° combined with abduction. The total contact and compression of the humeral head in the glenoid fossa will be measured using a Trill capacitive touch sensor. The geometric analysis involves measuring the superoinferior (SI) diameter of the humeral head, anteroposterior diameter of the humeral head, radius of curvature of the humeral head, humeral head retroversion, humeral head thickness, inclination angle, critical shoulder angle, glenoid width, glenoid length, and radius of curvature of the glenoid. Comparing our GHJ analysis with a geometric analysis will provide insight into possible reasons for the advantages of external rotation for anterior shoulder dislocation immobilization.

Webster, Ashlee

Institution: *TX - Tarrant County College*

Discipline: Nursing/Health Science

Author/Contributors:
Mayra Camarena *Adrian Ramirez* *Lizzeth Sanchez Gutierrez*
Ashlee Webster

Abstract Name: **Location of cartoid body oxygen sensors in the Alligator mississipiensis**

This research sought to identify the location of the carotid bodies in the Alligator missisippiensis. Biologists are interested in alligators due to their evolutionary success and distinct physiology. Their unique cardiopulmonary system has been researched, yet to date little has been published about the exact location of alligator carotid bodies. In humans, carotid bodies detect changes in blood levels of CO2, O2, and H+ and help maintain blood-gas homeostasis. Carotid body dysfunction can cause congenital central hypoventilation syndrome (or Ondine's Curse) and other forms of sleep apnea. Alligators are useful as a study model for understanding the evolution of blood-gas regulation in terrestrial vertebrates since they have changed little in the last eight million years. Further research on their vasculature and carotid bodies may help researchers understand how to treat certain human carotid body related diseases. Prior studies have determined that the carotid bodies in mammals are typically located at the bifurcation of the internal and external carotid arteries found laterally in the neck. The authors hypothesized that alligator carotid bodies would also be located at the bifurcation of the internal and external carotid arteries, although in alligators, this bifurcation is located on the posterior surface of the skull. Methods used in this study included vascular dissection of seven juvenile, female alligators, vascular casting, and Kluver-Barrera histological tissue staining for identifying myelin. The researchers' results showed that myelin was located at the bifurcations of the external and internal carotid arteries, indicating the likely presence of nerve fibers from the glossopharyngeal nerve and carotid body. Interestingly, as suggested by prior CT scans of alligator vasculature, the researchers also confirmed via direct dissection that the branching patterns of the left and the right carotid arteries were asymmetrical in the alligators studied.

Wedderstrand, Katie

Institution: *FL - Stetson University*

Discipline: History

Author/Contributors:
Katie Wedderstrand

Abstract Name: **"I wish you would throw that bone out of the window.": The Bone Wars and Cultural Nationalism in the late Nineteenth Century**

In the United States, an episode of unethical fossil hunting called the “Bone Wars” took place between the 1870’s and 1910, creating a paleontological collections competition in American natural history museums. The actions and field collecting of two key figures, Othniel Charles Marsh and Edward Drinker Cope drove the narrative of the Bone Wars and garnered attention from European institutions and paleontologists. Although most of the current literature on the Bone Wars follow Marsh, Cope, and their hired fossil hunters as they search the field for the next big fossil find, little has been said about the relationship between American paleontologists and institutions and their British and European counterparts, especially the role of cultural and intellectual nationalism on the field of paleontology. The large collections of fossils that were found in the West built up a sense of identity on both a regional and national scale. Even with fossils building up an identity in institutions, American paleontologists still referred to European texts and knowledge, because the competitiveness of the Bone Wars was not an isolated event. It played on the prior successes of British and European paleontologists in the early nineteenth century in Europe. Conversely, the Bone Wars’ competitive nature spurred many new discoveries that impacted both American and European paleontology and institutions alike. By acknowledging this relationship and the intellectual/cultural nationalism in which the Bone Wars are set, one can investigate other national relationships within the field, enabling an analysis of the history of paleontology in a more whole sense.

Weeks, Moriah

Institution: *WI - University of Wisconsin-Oshkosh*

Discipline: Anthropology/Archeology/Human Geography

Author/Contributors:
Moriah Weeks

Abstract Name: **Community Gardens and the Effects on Participants**

When we think of community gardens, we think about green spaces where people can come together to grow food. This research will examine how community gardens impact the community around them and how people benefit from them. Prior research indicates that community gardens have a positive impact on the community and provide many benefits including improved food access as well as economic, health, social, and environmental benefits. For example, because people are growing and selling food in their community, they can keep money in their community. Individuals who work or are involved with the gardens also shape their identity. People can express themselves through garden-based art and in how they get to grow their plots. Gardens are also a good way to connect and build relationships with local farmers and with other members of the community. The purpose of this research is to understand the impact community gardens have on the people who participate in them. Specifically, we will examine the impacts and benefits (environmental, subsistence, social, emotional) that community gardens have for the participants in UWO’s Community Gardens program, their perspective on why they participate in this program, and what they think sustainable agriculture is. We will use surveys, interviews, and participant observation to gather this information. We hope this research will help us to understand the benefits people in our regions get from community gardens and how we could adjust community garden programs to provide more benefits and reach more people. This research can help us better define what we mean by sustainable agriculture and understand how it can be expanded.

Weiland, Rydia

Institution: *VA - George Mason University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Rydia Weiland,
Min Ji Kim,
Elizabeth Phillips

Abstract Name: **The Effect of 3D and VR on the Perception of Robot Humanlikeness**

My project focuses on investigating the effect of a 3D/VR space on the perception of robot humanlikeness. The research question I am investigating is "How do people's perceptions of robot humanlikeness change when viewing anthropomorphic bots in VR?" Using the ABOT (Anthropomorphic roBOT) database with over 200 images of humanlike robots, I created an environment in Unity to visualize these bots in 3D. After collecting demographic information such as age, gender, and ethnicity, the participant takes a short cybersickness screening questionnaire to better understand their capacity to participate in a 10-minute long VR experiment. Icollect data by having participants view a curated 3D environment where robot models may be examined and subsequently judged as "Not humanlike at all" to "Very humanlike" on a 100-point sliding scale. The participantanswer thehumanlikeness questionfrom within an HTC Vive Pro 2headset by using the provided controls to rate robots. My project builds on current research conducted in 2D and uses the same questionnaire type assessment to rate each robot models' humanlikeness. As an attempt to fill the gap in literature as well as an extension to the ABOT databse, this study will allow robot-researchers and designers to see how their bots are perceived as humanlike in an ecologically valid environment, as well as compare 2D and 3D humanlikeness scores from pre-existing data.

Weiland, Ted

Institution: *IA - Kirkwood Community College*

Discipline: FAN Abstract

Author/Contributors:
Ted Weiland

Abstract Name: **Building a Research Collaboration Between a Community College and a Research University**

Bridge programs are a popular method to enhance student success and is often documented as a key factor for easing the transition of students into college or university life. After seeing and hearing results regarding bridge programs at several conferences, a question became obvious: Is there any reason a research type program could also be used in such a way? With the personal experience of doing undergraduate research at a home institution as inspiration, decisions were made to pursue a research experience where the more limited facilities at a community college could work in collaboration with a local research based university. The concept of this summer research experience would allow for students to work on innovative projects in a facility they are already familiar with. This presentation will explore how such relationships can be developed, lessons learned along the way, and plans for the future.

Weinberger, Halley

Institution: *MN - Minnesota State University - Mankato*

Discipline: Psychology/Neuroscience

Author/Contributors:
Halley Weinberger *Finley Sims* *Caleb Chapman*

Abstract Name: **Creating a Pseudoscience Scale: Identifying Gaps in Critical Thinking in Acceptance of Pseudoscience Topics**

Pseudoscience pervades discourse across the world. Acceptance and consideration of pseudoscience was especially highlighted during the COVID-19 pandemic, demonstrating the threat of pseudoscientific beliefs to public health and the prevention of disease. Teovanović et al. (2020) conducted a study that revealed those who were less likely to participate in guidelines such as hand washing or physical distancing were more likely to believe in pseudoscience practices. Additionally, a study by Desta and Mulugeta (2020) revealed that the spread of pseudoscientific beliefs related to COVID-19 had a negative effect on the containment of COVID-19. Across the world, researchers recognize the importance of understanding the origins of pseudoscientific beliefs. García-Arch et al. (2022) created a validated psychometric tool to measure a range of pseudoscientific beliefs, though this scale was developed and validated in Spain. Our goal is to create a pseudoscience scale focused on specific medical beliefs within a United States sample. This is particularly important as pseudoscience beliefs can vary significantly across cultures. We aim to investigate how pseudoscientific beliefs about health and medicine in the United States correlate with intelligence and critical thinking. We created a survey which was distributed electronically to college students, with a goal of obtaining at least 100 responses across different school levels and other demographic characteristics. We began data collection in fall 2022 and plan to continue throughout winter and spring of 2023. This study will contribute to knowledge about what gaps in logic or critical thinking contribute to acceptance and belief in pseudoscience. We hypothesize that individuals with lower levels of critical thinking and intelligence will indicate higher agreement with pseudoscientific ideas. The analysis will aid us in more effectively targeting people with pseudoscientific beliefs in an effort to reduce the acceptance of pseudoscience.

Weiner, Jacob

Institution: *MN - University of Minnesota - Twin Cities*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jacob Weiner *Lauren Glassburn* *Esther Krook-Magnuson*

Abstract Name: **Investigation of Novel Hippocampal Cell Population's Modulation over Spatial Memory**

The supramammillary area (SuM) is a ventral hypothalamic nucleus with direct connections to the hippocampus. The SuM has been shown to modulate hippocampal theta rhythm - a measure of synchrony between hippocampal regions - and other processes such as cognition, learning, and memory. We recently identified a novel population of inhibitory hippocampal-based neurons projecting to the SuM. Referred here as inhibitory hippocampal-hypothalamic (IHH) cells, IHHs are believed to be localized to the hippocampal dentate gyrus (DG). IHH fibers have been identified near SuM-DG projecting neurons, a neuronal population which signals spatial novelty. Hence, this largely uncharacterized hippocampal cell population shows promise in modulating spatial novelty signals originating from the SuM (SuM-DG cells). We specifically hypothesized that IHH activation may suppress spatial novelty signals from the SuM and thereby impair discrimination of novelty and familiarity in a hippocampal-dependent task. To further investigate such claims, in-vivo optogenetic stimulation of IHH terminals (DG-SuM) was conducted during two behavioral assays: the hippocampal-dependent Object Location Memory (OLM) and the hippocampal-independent Object Recognition Memory (ORM) assessment. Opsin-positive and negative animals were prepared with ChR2 expression or a control virus expressing EGFP, respectively, localized to the hippocampal DG. Both groups completed the respective OLM and ORM assessments with a one-week break separating each behavior assessment. MATLAB was used to demarcate the time of investigation each animal spent per object, and a discrimination index was used to identify the investigatory preference of an animal. Following completion of the behavioral assessments, animals were euthanized to investigate implant location, virus expression and location, and tissue damage. Future experiments will continue to further characterize and investigate IHH's connections and modulation over spatial-novelty signals originating from the supramammillary area.

Weis, Lauren

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Keegan Moglowsky *McKenna Roessler* *Lauren Weis,*
Jennifer Muehlenkamp

Abstract Name: Implications of COVID-19 on College Counseling Services

Many aspects of college life were impacted by the restrictions set in place due to the Covid pandemic, especially when it came to mental health. During this time, the demand for counseling services increased and many students were reporting that the pandemic had negatively impacted their mental health (APA, 2020; Castonguay et al., 2021). Prior to Covid, studies have found that some of the most common concerns students present tocounseling with include anxiety, depression, and relationship difficulties (Cairns et al., 2010; Barr et al., 2011). It is unclear how the pandemic may have impacted the prevalence of these concerns on college campuses. One focus of our study was to uncover whether the most common presenting concerns have changed from pre-covid compared to post-covid. Another adjustment that was made due to Covid was the transition to treatment through an online setting. While these changes have been beneficial in managing depression, anxiety, stress, and other concerns, there have been mixed results when it comes to effectiveness compared to in-person treatments (Bambling et al., 2021). A second focus of our study sought to identify how satisfied patients of college counseling services were with online treatment. To complete our study, we looked at archival deidentified program evaluation data collected from a large Midwestern University System's counseling outcome evaluation tool including responses from our local campus. Our findings note that both at our campus and throughout thesystem, the most prominentpresenting concern both pre-covid (2017-2018) and post-covid (2021-2022) was anxiety, followed by stress and depression. Additionally, a majority (57%) of those who received counseling post-covid chose a telehealth appointment compared to an in-person appointment. Additional analyses examining group differences in satisfaction with counseling services are currently being completed. Implications of the results for counseling services on college campuses will be discussed.

Weiss, Moriah

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
Bryce Shoberg *Matt Laatsch* *Moriah Weiss,*
Rebecca Boese *Muhaison Ibrahim* *Krysti Knoche Gupta*

Abstract Name: Studying the Electrochemical Activity of Methanol Dehydrogenase in Lanthanide-Modified Methylobacterium extorquens

Recent studies have demonstrated that some enzymes in bacteria isolated from lanthanide-rich areas use lanthanides as metal cofactors in place of more common metals like calcium and that these lanthanide-enzymes have enhanced catalytic properties. For example, Methylobacterium extorquens is a methylotroph that conducts redox chemistry using methanol dehydrogenase (MDH). MDH is a type of quinoprotein that contains a pyrroloquinone and either a lanthanum (La3+) or calcium (Ca2+) metal cofactor. Here, the bioelectrocatalytic activity of MDH from M. extorquens grown in La3+ rich media is compared to MDH from M. extorquens grown in typical Ca2+ rich media. Biochemical assays have shown that La3+-MDH has higher activity than Ca2+-MDH. However, the bioelectrochemical activities from these bacteria have not been compared. If La3+ grown M. extorquens has higher bioelectrochemical activity than Ca2+ grown M. extorquens, then improved biofuel cells and sensors can be created. M. extorquens is grown in two separate cultures, one with La3+-rich media and one with Ca2+-rich media. Methylene blue is polymerized onto the surface of a glassy carbon electrode, then harvested bacteria or isolated enzyme is immobilized on the electrode by casting a mixture of the bacteria and tetrabutylammonium bromide (TBAB)-modified Nafion® onto the electrode surface. The bioelectrochemical activity for oxidation of methanol to formaldehyde is measured by cyclic voltammetry and amperometric i-t curves for various concentrations of methanol in a tris-HCl buffer. In addition to comparing the bioelectrochemical activity of the La3+-MDH and Ca2+-MDH, the activity of the whole bacteria and isolated enzyme electrodes will be compared along with the electrode lifetimes.

Weiss, Trevor

Institution: *CA - Orange Coast College*

Discipline: Physics/Astronomy

Author/Contributors:
Trevor Weiss,
Evangela Shread

Abstract Name: **Galaxy Morphology and it's Relation to Gas Content in Nearby, Star-Forming Galaxies**

Stars are formed in galaxies from the collapse of gas clouds composed mostly of hydrogen. It has been previously shown that the amount of gas in a galaxy depends on its shape and structure (its morphology), and that spiral galaxies tend to host more gas. Measuring gas content is somewhat difficult to do, so it would be beneficial to use easy-to-measure quantities to estimate gas content in galaxies. Our gas measurements are taken from archival data, yielding a sample of 108 galaxies with molecular hydrogen (H2) measurements and 3,338 with atomic hydrogen (HI) measurements. We examine the correlations between HI and H2 gas content and different structural parameters that measure the distribution of mass within the galaxies. We find that gas content is correlated most strongly with the density of stars in the inner regions of the galaxies, especially within the inner 3,000 light-years. Our findings offer a method for astronomers to estimate the gas content using easily obtainable morphological parameters, which is very useful in situations where it is difficult or impossible to obtain direct gas measurements.

Wellmann, Jessica

Institution: *PA - Duquesne University*

Discipline: Biology

Author/Contributors:
Jessica Wellmann,
David Lampe,
Marisa Guido

Abstract Name: **Development of an antiplasmodial polyprotein for paratransgeneis to combat malaria**

Malaria is a deadly vector-borne disease responsible for over 600,000 deaths in 2020[1] alone, and is caused by Plasmodium parasites. These parasites are transmitted to humans through a bite of an infected female Anopheles mosquito. Current preventive measures include bednets and indoor spraying of insecticides. However, due to increasing resistance from both the parasite and the mosquito vector, these are rapidly becoming ineffective, therefore indicating new control strategies are needed. One strategy to control the spread of malaria is paratransgenesis. Paratrangenesis is a technique that manipulates the microbiota of the mosquito vector to inhibit and kill the parasite within the mosquito. Asaia bogorensis is a commonly found bacterial species in the mosquito microbiome and has previously been engineered to express single antiplasmodial effectors and reduce the oocyst burden in the mosquito. This project looks to engineer strains of A. bogorensis that secrete a “polyprotein” of known antiplasmodial molecules. Each antiplasmodial has a different mechanism of action against Plasmodium, and should behave similarly to a drug cocktail. This should reduce the likelihood of Plasmodium developing resistance against any one antiplasmodial. In this study, we developed various strains of A. bogorensis that expressed two-effector polyproteins. We analyzed these strains for their ability to secrete our antiplasmodial polyprotein, and the effects of these polyproteins on fitness of transgenic A. bogorensis.

Wells, Dylan

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Devon Schroeder,
Gabriel Clark,
Ryan Smith,
Isacc Sundermeyer,
Dylan Wells

Abstract Name: **Perception of Information and Source Reliability B**

The term misinformation is being used so frequently now that it has become an annoying word to represent almost nothing. The perception of whether information is valid seems to be very dependent on who is giving the information. There are many different factors that play a role in deciding whether a source is credible or not. In the US today we are seeing that individuals are siding with news sources that have a similar political ideology when deciding what is fact and what is misinformation. The purpose of this research is to determine what factors correlate with someone'ssuseptiblity to misleading information. The personal characteristincs being studied include racial/ethnic background of the messenger and receiver, political ideology of the messenger and receiver, news media sourcepreference, expertise level of the messenger and receiver, and percieved trustworthiness of the messenger. The study will use information about controversial topics given by various sources and determine the level of confidence the subjects have about the legitimacy of the information. Demographics regarding the subjects will be collected. A correlational analysis will be made between traits of the message sender and receiver and the rating of the source information. Data analysis will be completed in the spring semester of 2023.

Wells, Hailey

Institution: *UT - University of Utah*

Discipline: Biology

Author/Contributors:
Hailey Wells

Abstract Name: **Accumulated Damage and Recovery in Drought-Stressed P. tremuloides**

Past research has demonstrated that prolonged drought, or multiple consecutive droughts, can lead to accumulated hydraulic damages in plant tissues. Drought stress, coupled with secondary or predisposing factors, is thought to be contributing tolarge-scale quaking aspen die-off events observed in recent decades (Anderegg et al. 2013). This research project aims to better understand these compounded hydraulic changes resulting from repeated droughts and whether aspen are more susceptible to other stressors, particularly pathogen invasion, during or after a drought season. Over a two year-period, aspen propagules were raised in an experimental garden under four different treatment conditions: true-drought, recovering, once-treated, and control. In 2022, we measured drought stress responses throughout the growing season and took mortality surveys at the end of the season. We will now be quantifying and characterizing leaf microbiomes in each of the plants in an attempt to identify recognizable pathogens. We will then be analyzing whether water stress is potentially linked to increased pathogen vulnerability. This research will begin to answer larger questions about how plants allocate their resources under stress, and how compounded stressors can affect overall forest health year to year.Anderegg, W.R.L. et al. 2013. Drought's legacy: multiyear hydraulic deterioration underlies widespread aspen forest die-off and portends increased future risk. Global Change Bio. 19:1188-1196.

Wells, Haley

Institution: *AL - University of Alabama at Birmingham*

Discipline: English/Linguistics

Author/Contributors:
Haley Wells

Abstract Name: **Grendel and Grief: Grendel's Sorrow as a Humanizing Agent**

From consuming entire human bodies to losing his arm in a ferocious wrestling match, the character of Grendel from the epic poem Beowulf is notorious. Opinions on him abound, but, at the core of the conversation, one hotly debated question persists: what is he? Is he a monstrous human or a deceptively human-like monster? For decades, scholarship on him has grappled with this question, with most scholars tending to focus on his body. Further, many scholars have argued that Grendel is othered or made completely monstrous in a variety of ways: through his abnormal corporeality, through his consumption of human bodies, through his alienation from human community and through his inability to use human language, to name just a few aspects. Fewer studies, however, have considered him in terms of the recent affective turn medieval studies has taken. For example, Robin Norris's 2019 book chapter "Sad Men in Beowulf," which discusses the range of grief experienced by men in the poem, does not consider how Grendel fits into this "sad man" paradigm or how his place within this framework affects our understanding of whether he is human or monster. In this paper, then, I argue that the grief Grendel experiences throughout the poem connects him to a network of other sad human men within the text, thus traversing a variety of othering boundaries that alienate him or work to render him monstrous. Consequently, Grendel's grief humanizes him.Furthermore, I argue that Grendel should be viewed on a spectrum that runs from fully monstrous to fully human and, throughout the poem, he slides more towards one categorization or the other. Thus, I suggest that the moments where he experiences and expresses grief like other sad men in the poem push him towards the human end of the spectrum.

Wels, Jordan

Institution: *NC - Elon University*

Discipline: Physics/Astronomy

Author/Contributors:
Jordan Wels,
Chris Richardson,
Thomas Vivona

Abstract Name: **Investigating the Diagnostic Potential of Optical Emission Lines for Finding Dwarf AGN**

Intermediate mass black holes (IMBHs), while scarce, are between 100 and 1,000,000 times the mass of the sun and give insight into how black holes and galaxies evolve. All massive galaxies contain a black hole at their center, and black holes which actively influence the observed properties of their harboring galaxy are called active galactic nuclei (AGN). Dwarf galaxies, often around 100 times smaller than the Milky Way, are the most likely sites to harbor IMBHs and resemble early universe galaxies in their composition and star formation rate. These dwarf galaxies can elucidate how IMBHs evolve into the supermassive variety found at the heart of massive galaxies. Diagnostic diagrams using emission lines can differentiate between star forming galaxies and AGN. These diagrams use the ratios of the amount of light emitted at optical wavelengths emitted from star forming galaxies or AGN. The most widely used diagram struggles to distinguish AGN in the IMBH range. New diagrams that use different emission lines are likely more resistant to the effects of a galaxy's physical environment. Simulations of AGN can help to corroborate these new diagrams by identifying the effects of a galaxy's physical parameters on the predicted emission line spectrum. Our preliminary results confirm that weaker optical emission lines (e.g., He II 4686) can differentiate between purely star forming dwarf galaxies and those harboring active IMBHs. We also show that strong emission lines commonly found in more distant galaxies (e.g., [O II] 3727, [Ne III] 3869) can effectively distinguish between the two classes when the weaker lines are undetected, a valuable tool for the newly launched James Webb Space Telescope.

Weltman, Abigail

Institution: *PA - Duquesne University*

Discipline: Nursing/Health Science

Author/Contributors:
Kayla Pavlock *Abigail Weltman* *Megan Whitaker*
Ralph Klotzbaugh

Abstract Name: **Undergraduate Nursing Students' Knowledge and Attitudes Toward LGBTQ+ Patients: An Assessment Related to an LGBTQ+ Cultural Competency Module**

Background: Nursing research has demonstrated knowledge deficits specific to care of the patient who identifies as lesbian, gay, bisexual, transgender, queer, + (LGBTQ+). Lack of knowledge specific to the care of people in LGBTQ+ communities continues in spite of this populations' increased health disparities. In an effort to address this lack of knowledge, both the Institute of Medicine and the US Department of Health and Human Services have called for prioritization in addressing these disparities. In fact, in their position statement on LGBTQ+ populations, the American Nurses Association (ANA) recognizes that nurses need to deliver care that is culturally congruent for LGBTQ+ populations. The ANA has therefore put forth recommendations that nursing education help to fill the void in the existing knowledge by incorporating content specific to the issues faced by LGBTQ+ populations. Toward that goal, this study sought to include a learning module covering healthcare considerations for the patient who identifies as LGBTQ+ within a required undergraduate nursing cultural competency course.Method:Student (N=124) knowledge related to care of the patient who identifies as LGBTQ+ was assessed before and after participating in a module entitled Cultural Consideration in Clinical Care: Working with LGBTQ+ Patients. Attitudes toward sexual orientation and gender identity were assessed before and after participation using the Modern Homonegativity Scale and Transphobia Scale respectively. A Wilcoxon signed rank test was conducted to evaluate whether students showed improved knowledgeand attitudes.Findings:Student knowledge scores related to care of the LGBTQ+ patient improved significantly after participating in the module. In addition, attitudes toward sexual orientation and gender identity improved significantly.Discussion:Incorporating content specific to issues faced by LGBTQ+ populations within undergraduate nursing education has the potential to improve clinical knowledge necessary for culturally competent care of LGBTQ+ population, as well as to improve attitudes toward these populations.

Wendorff, Anna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication/Journalism

Author/Contributors:
Anna Wendorff,
Won Jang

Abstract Name: **International Media Framing and the North Korean Missile Crisis**

This comparative study investigates coverage of the nuclear missile crisis in the United States, China, North Korea, and surrounding countries with the aim of advancing discussions around international media framing, nuclear policy, and nation building. The main research question concerns the extent to which news coverage is interconnected with the relationship of the media system and national interests within the dominant ideology of each country. The Cold War remained hot in the Korean Peninsula. North Korea and the United States have had a rocky relationship, especially due to North Korea's missile launch, ICBM, and nuclear tests. Our study examines the media coverage through a framework of Herman and Chomsky's (1988) Propaganda Model. This meant adopting different frames depending on dominant country ideology in the news media. North Korea's nuclear politics were framed in very different ways by each agency. Differences found in the amount and nature of news coverage, specifically themes, frame nature, sources used, and news geography for readers. Such variances are likely attributed to the propaganda efforts and those implications on news efforts in each country. Therefore, questions still endure about the level of connectedness between information systems and internal country ideals. Such scholarship will help explore the interconnectedness between press and politics, along with other sources of data and news collection from various contrasting global sources. Therefore, this study combines a quantitative content analysis with a qualitative assessment of the overall framing. Data collection will include the persistence of news frames cross-nationally, and then will analyze the current issue debates within international news coverage. The Asia-Pacific region has been an area of interest for propaganda scholars. This study is noteworthy and has the potential to contribute to propaganda studies based on based on the context in which it is taking place.

Wenner, Alex

Institution: *IL - Loyola University of Chicago*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Alexander Wenner *Charles Mettler* *Ellie Sharpe*
Thomas Hansen *Isabella Vari* *Alexander Le*
Joerg Zimmermann

Abstract Name: **Patterns of convergent somatic hypermutations in the adaptive immune response of Mus musculus**

During an adaptive immune response, it only takes 5 to 15 somatic hypermutations to turn a naïve B-cell receptor, which has moderate affinity for the cognate antigen, into a high-affinity binder with exquisite specificity for antigen. Understanding the underlying mechanisms that make this feat of adaptive evolution possible has been a longstanding goal of immunological research, since it determines antibody functionality. We propose that convergent somatic hypermutations (cSHMs), i.e. mutations at the same sequence position with the same germline and mature amino acid identity arising independently in different individuals, may contribute to antibody maturation in an antigen-independent manner by stabilizing the resulting antibody fold and rigidifying its binding site.To identify cSHMs, we analyzed all murine antibodies for which structures have been deposited in the Protein Databank, resulting in a dataset of 454 antibodies that are clonally unrelated and have gapless germline assignments and a moderate number of somatic hypermutations. Interestingly, we found that cSHMs are fairly common. For example, 329 of the 454 antibodies share at least two mutations, and 53 antibodies share at least five mutations with another antibody in the dataset. We also searched for cSHMs that are structurally in close proximity to each other. Approximately 400 clusters of cSHMs that are located within 10 Å of one another were identified.The observation of a large number of structurally related cSHMs suggests that this may be a common mechanism of antibody maturation. Structural proximity of cSHMs suggest that they act synergistically to improve function. Clusters of cSHMs may have evolved in the germline repertoire to increase the likelihood of a successful and timely adaptive immune response by providing “molecular switches” that can be easily “turned” during antibody maturation, and identification of such clusters may have implications for the development of vaccines and antibody-based therapeutics.

Wenner, Whitney

Institution: *MN - St. Catherine University*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Lana Prokop,
Whitney Wenner,
Emma McAfee

Abstract Name: **The Prevalence of Urinary Incontinence in Female Collegiate Athletes**

The unintentional loss of urine, or urinary incontinence (UI), can have a negative impact on quality of life, including low self-esteem, depression, and reduced participation in social activities. UI has been studied in post-partum and older women; however, there is little research on female collegiate athletes, likely due to the fact that most collegiate athletes are young, relatively healthy, and have not given birth. The purpose of this study is to identify the prevalence of UI among National Collegiate Athletic Association (NCAA) Division-III female athletes at a Midwestern university. Emails and fliers were used to recruit all 159 eligible student-athletes; potential participants were asked to complete a voluntary, anonymous, online survey regarding their experience with UI during sport. Questions included information about unintentional leakage of urine during sport participation (practice, training, competition), as well as everyday life. The response rate was 80.5%. In everyday life, 59.4% of participants experienced UI, while 43.0% experienced UI related to sport. Based on prior literature, the eleven sports were divided into three impact groups: high, moderate and low. According to a chi-square analysis, there was no statistically significant difference in prevalence of UI between impact groups. Based on the high prevalence of UI in this study population, it is recommended to screen for UI in the female athletic population, beginning in adolescence, to treat the condition in its early stages. It is important to encourage screening to allow women to continue to be physically active and improve their overall quality of life. Further research should include how education for healthcare providers, athletes, and athletic staff can impact the prevention of UI and assist in promoting early interventions to keep athletes in sport and mitigate future issues.

Wersal, Madeline

Institution: *MN - Minnesota State University - Mankato*

Discipline: Biology

Author/Contributors:
Madeline Wersal

Abstract Name: **Evaluating corn ear attributes in a perennial cover crop system**

Corn fuels the United States and a significant portion of the world, whether through feed, human or animal, or fuel, ethanol. However, current intensive corn production strategies/practices have led to negative environmental impacts such as soil erosion, poor water quality, and an increase risk of flooding. As a potential solution to mitigate these impacts, cover crops, planted between the corn rows,have been proposed. Benefits of cover crops include reduced soil erosion, pest and disease control, increase in crop diversity, and improved soil health. Current cover crop practices utilize annual species that must be replanted every growing season. Instead of using annual species, what if perennial ones were used instead? This would eliminate the need for annual replanting.Corn is a wind pollinated plant. Each kernel of corn must be pollinated. If less than 50% of the kernels are pollinated the plant will drop the ear prematurely. Also, if less than 50% of the kernels of the bottom two rows of the ear are pollinated then the plant will also prematurely drop the ear. In both these scenarios, the ears dropped lead to a reduction in yield. Ultimately, reduced yield leads to less money in the farmers' pockets. Will cover crops reduce corn yield through reduction of pollination?To examine potential impacts of perennial cover crops on corn yields, three different perennial cover crop systems were sampled along with one conventional system. Yield data was obtained from each system and 48 ears were randomly sampledfrom each system. Each of these ears was weighed, percent pollination calculated, and number of kernels recorded. Using these three parameters, statistical analysis will be conducted to determine if there is a significant difference between yield and pollination in conventional and perennial cover crop systems.

West, Dorothea

Institution: *PA - Drexel University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Dorothea West,
Frank Ji

Abstract Name: **Drug Design: Development of a Small Molecule Inhibitor for TIPE2 for the Treatment of Cancer**

Tumor necrosis factor a-induced protein 8 like 2, or TIPE2, is a protein involved in the proliferation of tumor cell growth through the facilitation of leukocyte polarization. Leukocyte polarization, the structural change to a white blood cell enabling motility, supports chronic inflammation; providing the necessary angiogenic factors for tumor cells to thrive. The aim of this project is to develop a small molecule inhibitor for TIPE2, which could act as a therapeutic agent to prevent further growth of cancerous tumors. Target selection begins the process of drug design; a biomolecule involved in the pathway of disease is identified, herein, TIPE2 is the target. Virtual screening follows with libraries of fragments, docked in the protein using AutoDock Vina. For different linking strategies the ligands were docked in a moderate grid box, spanning the cavity entrance; four small grid boxes, breaking the entrance into four quadrants; and a high grid box, occluding the entrance. The highest binding fragments were determined and linked to other high-binding fragments. This process was repeated using molecules from the various grid boxes to optimize the locations of binding within the cavity. These compounds are being modified for the desired absorption, distribution, metabolism, and excretion (ADME) properties. The observed results appear promising and suggest that developing a compound that has the desired properties is possible with more manipulation.

West, Jada

Institution: *NC - North Carolina State University*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Angela Allen,
Chase McCrary,
Emma Mullins,
Jada West,
Mindy Dunn

Abstract Name: **Continuous Compliance Monitoring of Water Quality to Determine the Effects of Urbanization on Richland Creek**

This project aims to establish a long-term water quality compliance monitoring system to determine the degree to which urbanization is impacting physical and chemical indicators crucial to the health of Richland Creek and Schenck Forest. Continuous monitoring allows us to observe the changes in these indicators as commercial, residential, and transportation development expand in the surrounding area. The area of study consisted of two sites situated along Richland Creek, located in Raleigh, North Carolina, where biweekly YSI and nutrient testing were conducted. The sites' data were compared to observe two trends: (1) the initial contrasts stemming from their different existing degrees of urbanization, and (2) the changes in these contrasts due to their differing rates of increasing urbanization. Our goal is to influence city and community programs in Schenck Forest to protect water resources for the people who consume them and the ecosystems that depend on them. We hope this research can help establish a baseline for these indicators to inform future research around water quality, aquatic life, and human health in Richland Creek and the field as a whole.

West, Jillian

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

Author/Contributors:
Thomas Rose,
Brennan Vanlandingham,
Jillian West,
Rachel Baltuff,
Alex Kruschke,
Madison Lloyd

Abstract Name: **Role of Motivation on Academic Success**

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation in education is and how it impacts the academic success of college students. Factors that will be studied include intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation students vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions adressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

West, Madeleine

Institution: *TX - Trinity University*

Discipline: English/Linguistics

Author/Contributors:
Madeleine West,
Victoria Aarons

Abstract Name: **Re-imagining Auschwitz in Graphic Narratives**

The medium of graphic novels has largely been underestimated in the landscape of art and literature. Yet, the metaphysics of graphic novels yields itself to depict atrocity in ways that traditional art cannot through the intersection of temporal linearity and spatial boundaries. Comics such as Bernie Krigstein's 1955 "Master Race" depicted the atrocities of the Holocaust while excluding the identity of its victims, but the creation of graphic novels as a genre of Holocaust representation and the specific reference to a Nazi death camp would emerge decades after "Master Race" with Art Spiegelman's Maus, the graphic novel depicting his father's memories of Auschwitz in the past while simultaneously visualizing how these traumatic memories of the Holocaust continue to linger in the present and in large part shape the future for the descendants of survivors. Maus inspired other second-generation survivors to depict their stories, through the medium of comics, of the influence of parent(s) who survived Auschwitz. These artists use differing artistic and textual styles and have varying reasoning for wanting to depict their parent's stories, yet they all evoke postmemory in showing the intergenerational memory of the Holocaust. The continuation of artists using the graphic novel medium to depict Auschwitz, a medium where time and space merge, has influenced the way we remember and understand the site where trauma and inhumanity still remain in the memory of survivors and their descendants. Our research project, bringing together the disciplines of History and English, examines the representation of Auschwitz in graphic novels in order to contribute a chapter to the Routledge Handbook of Auschwitz-Birkenau, a collection of essays designed to contribute to a shared understanding of the role of Auschwitz-Birkenau in the implementation of genocide and the continuing legacy of the Holocaust.

Westlund, Courtney

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Courtney Westlund,
Bart Dahl,
Aya Abdrabbo

Abstract Name: **Three-State Biaryl Lactone Molecular Switches with Amine donors**

Our research is focused on the synthesis of four bridged biphenyl molecules with amine donors. These three-state biphenyl molecules, due to their chemical properties, will find applications as nanoscale fluorescent sensors and molecular mechanical devices. Biphenyl molecules have known dihedral angles, leading to differing optical and conducting properties when manipulated. By using a lactone-bridge we can force the molecule into and out of planarity; at low pH the molecule takes a planar conformation ("ON"), while at high pH it's non-planar ("OFF"). Research from previous groupshas shown similar two-state molecules' effectiveness at readily switching conformations when exposed to different chemical environments. We are researching the addition of diethylamine and diphenylamine donor groups. By combining cyano and nitro acceptors used previously and differing amino donors within biphenyl molecules, we can enhance optical properties and pH sensitivity. This pH sensitivity will be more precise with the addition of a third "OFF" of the molecule. At low pH, the amino group should become protonated, leading to the second "OFF" state and giving the molecule a narrow "ON" state. The "ON" state would result in visible color differences than the "OFF" state of the molecule. These characteristics would improve the usefulness of these molecules as pH sensors. We have successfully synthesized two of our target molecules, one molecule is a cyano acceptor group with diethylamine donor group and the other is a nitro acceptor group and diethylamine donor group. We will be continuing this work to synthesize the other two molecular switches.

Westman, Christina

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: **Music**

Author/Contributors:
Tessa Ferry *Christina Westman* *Elise Williams*
Megan Gawlitta

Abstract Name: **Music Listening Activities with Adaptations for People who are Neurodiverse**

This presentation will provide a description for how people who are neurodiverse hear music differently than others and therefore respond differentially. It will include a neuroscience description of what happens in the brain to allow communication skills to develop and provide meaningful interaction with others. Perspectives from a college student with autism spectrum disorder (ASD) who became interested in this area of research while taking the college course Influence of Music on Behavior participated with students who were neurotypical and their professor to test out different styles of music and identify responses. Descriptions of the funding will be shared, including considerations of properties of music and their corresponding effects on perceptions of people who are neurodiverse. Findings were also implemented in a group home with residents with ASD who responded well to the specific properties identified. A description of eight sensory systems, sensory overload, and co-occurring health conditions will be described along with an explanation about communication development. Considerations for minimizing agitation and maximizing positive responses will be included for these eight sensory systems: proprioceptive, interoceptive, visual, tactile, auditory, vestibular, olfactory, and taste.People who are neurodiverse respond well to ascending arpeggios, louder volume, detached and staccato style, full chords, and complex and accented rhythms more than to lyrical, flowing melodies, although responses are unique for each individual. A discussion of theories related to “Overlearning Phenomenon” and Broken Mirror Hypothesis will be included related to mirror neurons and applications for teaching music. Hyperactive responses based on circuitry signaling patterns overpowering other functions will be described within the context of striatal loops. Perspectives of people who are neurodiverse on different types of intervention usually used will be included. Adaptations based on national standards for music and social justice will be provided.

Westmoreland, Sarah

Institution: ***AL - Samford University***

Discipline: **Mathematics**

Author/Contributors:
Kendall Bearden,
Sarah Westmoreland,
Kwadwo Antwi-Fordjour

Abstract Name: **Role of Fear in an Eco-epidemiological Model with Species Aggregation**

In this talk, an eco-epidemiological model with species aggregation and disease in prey subject to fear of predators will be discussed. We assume that the reproduction of the susceptible class of the prey population is affected by fear induced by the predators. We present some basic mathematical results such as positivity, boundedness, and local stability. The coexistence of the species at the endemic state is possible for our proposed model via numerical simulations. This coexistence equilibrium can be destroyed by increasing the strength of fear of predators. We will show that the strength of fear can create and destroy the coexistence equilibrium. In some cases, we will show that the strength of fear can drive a stable endemic state into extinction in finite time. We will also present some interesting and rich bifurcation behaviors revealed by our model.

Weston, Savana

Institution: *OK - Oklahoma State University*

Discipline: Visual Arts/Performance Art

Author/Contributors:
Savana Weston

Abstract Name: **Designing the Ideal Woman: From Gibson?s Girls to TikTok?s "That Girl"**

This paper discusses approximately 100 years of history in graphic design, from the era of Charles Dana Gibson as a predominant illustrator to contemporary times, specifically focusing on how men have used design practices to shape feminine ideals in popular American culture, ultimately for profit and the continued subjugation of women. Moving in to its discussion of contemporary graphic design, this paper will address newfound modes of power for women in graphic design and the different ways that these women either uphold traditional ideals of femininity or expand them. This paper highlights contemporary examples such as the highly curated content of TikTok micro-influencers and the personal brands of macro-influencers like Kim and Kourtney Kardashian, drawing conclusions about the state of feminine progress in light of these examples. In order for all women to truly achieve the social, political, and economic equality they have long fought for, they must use contemporary modes of dispersing media and graphic design to make portrayals of “the ideal woman” vastly more inclusive.

Wetzel, Kelly

Institution: *CA - California State University - Channel Islands*

Discipline: Psychology/Neuroscience

Author/Contributors:
Kelly Wetzel,
Melissa Soenke

Abstract Name: **An Application of Mortality Salience on Self-Esteem and Exercise**

Terror management theory (TMT; Greenberg, Pyszczynski,; Solomon, 1986) posits that we naturally fear mortality and attempt to decrease anxiety by increasing self-esteem and adhering to cultural worldviews which provide meaning to life. Past research supports cultural worldview and self-esteem as strategies for relieving anxiety. Exercise and health are central values of many contemporary worldviews and can also be viewed as a literal means to prolong life (Andreasson et al., 2016). Additionally, exercise is linked to increased self-esteem in gym attendees because it is an important value of gym culture (Zervou et al., 2017). For instance, basketball players primed with death increased their performance in the sport when considered a valuable activity (Zestcott et al., 2016). The same was discovered for strength trainers with increases in strength occurring after mortality primes when self-esteem was derived from lifting weights (Peters et al., 2005). The current study builds on this past research to investigate whether anxiety about mortality can be reduced by increasing self-esteem through exercise. The way to test this relationship is to utilize the mortality salience (MS) hypothesis, the process of bringing death to the forefront of a person’s mind to increase need for these protective structures. The participants are randomly assigned to either think about their death (MS) or a control topic and then asked to lift 5 or 7lb weights. The dependent measure will be which weights participants choose, how many reps with the weights they complete and their ratings of self esteem on the Rosenberg self-esteem scale before and after lifting weights. Based on previous research, it is hypothesized that if self-esteem protects against mortality salience, then the need for exercise will increase. It is anticipated that fitness plays a considerable role in how we gain self-esteem and manage anxiety-inducing thoughts about health and death.

Whitaker, Megan

Institution: *PA - Duquesne University*

Discipline: Nursing/Health Science

Author/Contributors:
Kayla Pavlock *Abigail Weltman* *Megan Whitaker,* *Ralph Klotzbaugh*

Abstract Name: **Undergraduate Nursing Students' Knowledge and Attitudes Toward LGBTQ+ Patients: An Assessment Related to an LGBTQ+ Cultural Competency Module**

Background: Nursing research has demonstrated knowledge deficits specific to care of the patient who identifies as lesbian, gay, bisexual, transgender, queer, + (LGBTQ+). Lack of knowledge specific to the care of people in LGBTQ+ communities continues in spite of this populations' increased health disparities. In an effort to address this lack of knowledge, both the Institute of Medicine and the US Department of Health and Human Services have called for prioritization in addressing these disparities. In fact, in their position statement on LGBTQ+ populations, the American Nurses Association (ANA) recognizes that nurses need to deliver care that is culturally congruent for LGBTQ+ populations. The ANA has therefore put forth recommendations that nursing education help to fill the void in the existing knowledge by incorporating content specific to the issues faced by LGBTQ+ populations. Toward that goal, this study sought to include a learning module covering healthcare considerations for the patient who identifies as LGBTQ+ within a required undergraduate nursing cultural competency course.Method:Student (N=124) knowledge related to care of the patient who identifies as LGBTQ+ was assessed before and after participating in a module entitled Cultural Consideration in Clinical Care: Working with LGBTQ+ Patients. Attitudes toward sexual orientation and gender identity were assessed before and after participation using the Modern Homonegativity Scale and Transphobia Scale respectively. A Wilcoxon signed rank test was conducted to evaluate whether students showed improved knowledgeand attitudes.Findings:Student knowledge scores related to care of the LGBTQ+ patient improved significantly after participating in the module. In addition, attitudes toward sexual orientation and gender identity improved significantly.Discussion:Incorporating content specific to issues faced by LGBTQ+ populations within undergraduate nursing education has the potential to improve clinical knowledge necessary for culturally competent care of LGBTQ+ population, as well as to improve attitudes toward these populations.

White, Emma

Institution: *NE - University of Nebraska-Lincoln*

Discipline: Art/Music History

Author/Contributors:
Emma Grace White

Abstract Name: **Salvation, Sallman, and the Simulacra: Applying Jean Baudrillard's "Phases of the Image" to a History of Christian Art**

This paper explores the history of "Christian" art through the lens of sociologist Jean Baudrillard's "successive phases of the image" in an effort to understand why Jesus has become an icon of the Republican party. In his book Simulacra and Simulation, Baudrillard asserts that all representation is a simulation of itself, not a representation of the truth. Different representations interact with each other and build off one another, until an image is so departed from depicting the truth that it represents something else entirely. The four successive phases of the image are as follows: 1. a reflection of basic reality, 2. the masking of reality, 3. the masking of the absence of reality, and 4. bearing no relation to reality whatsoever. Primarily, I will be focusing on two artists: Warner Sallman and Jon McNaughton. By analyzing the art of Warner Sallman, the history of an Americanized Jesus can be outlined and understood, as well as the history of the fundamentalist movement, which will eventually become evangelicalism. McNaughton's work capitalizes on the groundwork of nostalgia laid by Sallman but uses the image of Jesus to make much stronger, right-leaning political statements which are a complete departure from any semblance of Christian truth. For those that believe, the image of Jesus has become a replacement for the idea of divine truth, which the Republican party has made use of by associating Jesus with nationalist concepts.

White, Jackson

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Makenzie Sedlacek,
Jackson White

Abstract Name: Geology of the Proposed Dreamer Segment of the Ice Age National Scenic Trail, Rusk County, Wisconsin

The Ice Age National Scenic Trail (IAT) showcases Pleistocene glacial features in the State of Wisconsin. The Ice Age Trail Alliance has proposed a new Dreamer Segment trail to focus on landforms in the Blue Hills region of western Wisconsin. The Alliance commissioned a study the geomorphology of the proposed trail segment to create publication-quality materials (both text and figures) for a future interpretive guide.GIS analyses and field work have been used to study the proposed Dreamer Segment and the surrounding region. Published papers about the glacial geomorphology of the area were read. LiDAR-based shaded DEMs were used to evaluate glacial landforms in the region and determine potential interpretive stops. This was followed by five days of field work to determine the best locations for potential interpretive sites.Multiple geomorphic features are proposed as interpretive stops along the Dreamer Segment. Glacial landforms of the Chippewa Moraine are well represented, including kettles, hummocks, and ice-walled-lake plains. Precambrian Barron Quartzite is exposed in Gundy's Canyon. The most unique feature is the Blue Hills Felsenmeer State Natural Area. During the late Chippewa Phase of the late Wisconsin Glaciation, meltwater from the ice margin eroded a westward-dipping, subaerial "box canyon". Frost shattering and rock falls produced the angular "sea of rocks" of the Blue Hills Felsenmeer. The final product of this research will be interpretive text, publication-quality figures, and a research poster to be donated to the Alliance and the National Park Service.

Whiteford, Mari

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Visual Arts/Performance Art

Author/Contributors:
Megan Patterson,
Ellen Mahaffy,
Mari Whiteford

Abstract Name: Queer Monstrosity

In Fall 2022, 18 students enrolled in an honor's course A Queer Lens, Representation Art, Photography and Film. Like the idea of queer theory itself, students were given the opportunity to dismantle the traditional assumptions about gender, sex, sexuality, heteronormativity, and more through a creative project. With the given prompt,create your own queer monster, each student could sculpt, draw or paint their concept. Students then applied their queer optic (Gopinath) of monster theory, queer artistic practices, and queer theory to realize their own aestheticThe creative process started with a rough sketch, pitched concepts to the class, and then consultationswith a monster making expert. If creating a sculpture then an armature was crafted for paper mâché clay application. Students will then take another week to finalize a queer monster by painting, dressing, adorning with different materials and textures. Within monster theory, beasts, demons, freaks, and fiends are symbolic expressions of cultural unease that pervade a society and shape its collective behavior. This aligns with queer theory because of the monsterization of queer characters in film and the queer coded monsters and ideasthatare usually prevalent in horror films. Taking the idea of monstrosity and refiguring it into a work of art, depictingand evokingsome sort of feeling (horror, longing, confusion, desire, etc.) was a goal for each student. In gathering all 18 works together we see the different interpretations of monstrosity. With this proposed exhibition, we envisioned monstrosity as a whole other level of what it means to be queer. Thus, each student will include a statement about their piece that explains their understanding of queer monstrosity. Final critique is taking place Decemeber 22nd, 2022. Images will be posted to Ellen Mahaffy's website shortly afterwords. (www.redcatphoto.com)

Whitfield, Benjamin

Institution: ***AR - Arkansas State University***

Discipline: Engineering/Applied Sciences

Author/Contributors:
Benjamin Whitfield *Jacob Oster* *Robert Fleming,*
Maureen Dolan *Shea Harris*

Abstract Name: Engineering a Biological Habitat for real-time monitoring of plastic consumption in a Microgravity Environment Onboard the International Space Station

Low-density polyethylene (LDPE) is a widely used thermoplastic polymer, with applications ranging from packaging to radiation shielding. LDPE is substantially less recyclable than other common plastics, such as polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polypropylene (PP), with a 5% EPA-reported recycle rate. Therefore, LDPE disposal is an imminent and growing environmental challenge on Earth, and similarly affects future needs for waste disposal during long-term space travel. Recently, Galleria mellonella, commonly known as the waxworm, was shown to degrade LDPE into ethylene glycol in offering a sustainable approach for plastic use and disposal. In July 2022, Arkansas State University sent an experiment to the International Space Station (ISS) to test if waxworms can degrade LDPE in a microgravity environment as a part of the NASA Student Payload Opportunity with Citizen Science (SPOCS) program. The engineering challenge required designing an instrumented waxworm habitat, that met NASA's operational constraints for ISS experiments, capable of maintaining waxworms during a ~30 day flight while monitoring their mortality, overall health, and LDPE consumption. Constraints included a standardized form factor, maximum power at 900mA/5V, and full environmental containment. The final module (10x10x15 cm) was instrumented with cameras for observing waxworm behavior during flight, as well as temperature sensors and humidity sensors, all controlled by a Raspberry Pi Zero microcontroller. A rapid design and testing approach was used during the design phase, utilizing 3D printing to quickly test and validate designs. This approach resulted in the build of an autonomously operated module to capture images and log temperature and humidity data. Real-time imaging capabilities confirmed the hypothesis that waxworms can survive microgravity stress and validated food and plastic consumption patterns and behaviors similar to earth controls. These results may enable new strategies in the future for improving sustainability and waste efficiency during long-term space travel.

Whitlock, Emma

Institution: ***IL - Northern Illinois University***

Discipline: Biology

Author/Contributors:
Emma Whitlock,
Apoorva Dabholkar,
Dr. Ana M. Calvo

Abstract Name: The Role of the OsaA Gene in Aspergillus fumigatus Development

The filamentous fungus Aspergillus fumigatusis an important saprophytic, airborne, and opportunistic human pathogen. It causes respiratory aspergillosis, which is one of the leading causes of deaths among individuals affected by fungal infections worldwide, particularly in immunocompromised population groups. The pathogenicity of the fungus is attributed to its virulence factors such as thermotolerance and effective germination rate at 37°C (human body temperature). The small size of A. fumigatus spores (2-3 µm) allows them to easily enter the human respiratory tract. Once inside the host, the spores germinate to form mycelial mass. Several virulence factors such as cell wall adhesins and hydrolytic enzymes degrade the protective membrane of immune host cells. Additionally, A. fumigatus produces secondary metabolites which are proven to be highly cytotoxic to human system. Nowadays, the number of immunocompromised individuals affected by aspergillosis is on the rise. At the same time, resistance to current antifungal treatments is occurring, therefore, it is paramount to find new treatments. Our study investigates possible new genetic targets against A. fumigatus infections. In the phylogenetically close model organism, Aspergillus nidulans, the osaA gene was identified to orchestrate both asexual and sexual development, suppressing the formation of fruiting bodies and promoting conidiation. Our research focuses on investigating the role of osaA in development, toxin production, and virulence of A. fumigatus. Our results revealed that osaA has an important role in fungal growth and conidiation in this fungus. Deletion or overexpression of the osaA gene showed significant phenotypic changes in its colony morphology and reduced conidial production, generating abnormal conidiophores in the absence of osaA.

Wibel, Brayden

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Alyssa Harrington,
Lacee Allen,
Aurora Daigle,
Lauryn Deetz,
Abigail Lemos,
Brayden Wibel

Abstract Name: Parental Involvement in Education B

How relative is parental involvement in a child's education to the overall success of the child? Can parents be too involved in their child's education? In society today we are seeing an increased debate over the different types of parents and how good or bad they are to the overall growth and development of their children. Are helicopter parents harming their children's future? Are free range parents raising children with no rules or boundaries providing a need for society to deal with the evenual negative outcomes? The goal of this research is to study the different parental involvement levels in the education of their children and determine what positive and negative outcomes are present under each type of parental behavior. Some criteria that will be important in this study are the level of parental invovlement, to what age of the child does the involvement continue, academic performance and self-efficacy of the children. Other areas of interest in this study include whether gender and race/ethnicity are impacted differently under differing parenting styles. Correlational analysis will be completed through data collection in the spring semester of 2023.

Wiktor, Christine

Institution: ***PA - Susquehanna University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Sydney Salas *Christine Wiktor* *Swarna Basu*
Pavithra Vivekanand

Abstract Name: Investigating the anti-inflammatory effects of Pomegranate Gold Nanoparticles on LPS stimulated THP-1 macrophages

While inflammation is a crucial response to illness or injury, chronic inflammation has been shown to be a contributing factor to autoimmune diseases like multiple sclerosis, systemic lupus, and rheumatoid arthritis. The therapies currently used to treat these diseases focus on immunosuppression which can put someone at high risk for infection and many other opportunistic illnesses. Emerging therapies are targeting inflammatory cytokines by using plant-based derivatives. Several of these plant-derived molecules like curcumin, colchicine, capsaicin, and quercetin have demonstrated anti-inflammatory properties. The anti-inflammatory properties of pomegranates are correlated to a unique ellagitannin known as punicalagin. It has been hypothesized that Punicalagin is key in preventing the release of IL-6, IL-1b and TNF-a cytokines by inhibiting the NF-kB pathway. The objective of this work is to investigate the anti-inflammatory ability of pomegranate gold nanoparticles (Pom AuNPs) to reduce cytokine production from differentiated THP-1 cells. The use of pomegranate juice to mediate the synthesis with the gold chloride allows for the improvement of pharmacological activity and overall stability of the AuNPs. An XTT cell viability assay indicated that the Pom AuNPs have minimal cytotoxic effects at concentrations up to 100 mg/ml. Differentiated THP-1 cells were pre-treated with increasing concentrations of Pom AuNPs for 1 hour prior to lipopolysaccharide (LPS) exposure. LPS is a component of gram-negative bacteria that induces the secretion of pro-inflammatory cytokines by triggering the activation of the NF-kB signaling pathways. Preliminary results suggests that treatment of cells with Pom AuNPs resulted in a decrease in IL-6 production when compared to LPS only treatment but had no effect on the production of TNF-a.

Wilbanks, Johnathon

Institution: *NC - Gaston College*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Cristy Huynh,
Johnathon Wilbanks,
Luisa Osorio Rada,
Haeun Chung

Abstract Name: **Watermelon Malate Dehydrogenase and Two Mutants**

Malate Dehydrogenase is an enzyme found in the glyoxysomes and mitochondria of plant cells. In glyoxysomes, Malate Dehydrogenase is part of the glyoxylate cycle which converts fatty acids to sugars. In the mitochondria, Malate Dehydrogenase is the last enzyme of the citric acid cycle. The citric acid cycle produces NADH and FADH2, two essential reactants in the electron transport chain for generating cellular energy. Malate Dehydrogenase catalyzes the reversible oxidation-reduction reaction of malate and NAD+ to oxaloacetate and NADH. Malate Dehydrogenase or MDH is an enzyme that converts fatty acids to sugars in glyoxysomes and catalyzes the reversible oxidation-reduction reaction of malate and NAD+ to oxaloacetate and NADH in the mitochondria. This study aims to investigate the effect of two mutations, D132A and R124K, on the activity of glyoxysomal watermelon MDH and determine the role of these two amino acids in the structure of the enzyme. We hypothesize that R124K will decrease activity due to broken intermolecular forces between the enzyme and substrate/ cofactor for R124K. D132A will also decrease in activity because of a disruption of a hydrogen bond in the loop region, which may affect the ability of the loop to close effectively. PYMOL was used to generate the mutated protein structures of 1SMK, and the lowest energy conformations were identified using SPRUCE and SZYBKI. The effects of the mutations were analyzed using computer modeling by superimposing the mutated versions on the crystal structure of the human mitochondrial MDH (4WLU). The activity of the mutants was compared to the wild-type using kinetic assays.In conclusion, the initial rates, specific activity, and turnover numbers calculated for the two mutants were significantly lower than the wild-type confirming that both mutations hindered the wild-type's activity efficiency.

Wilbur, Chris

Institution: *WI - University of Wisconsin-Platteville*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Maddie Gehl,
Chris Wilbur

Abstract Name: **The Influence of Restricted Abortion on Women's Mate Choices**

Reproductive rights have been fiercely contested over the past several decades. With the recent overturning of Roe v. Wade, women's liberty and bodily autonomy is once more at stake. The US Supreme Court's decision to overturn Roe v. Wade has taken away the constitutional right to seek abortion: a decision that has harmful and inequitable repercussions on the reproductive health of many Americans. Given the anxiety and confusion surrounding the removal of Roe v. Wade, it is even more precedent to examine how women's behaviors across of spectrum of disciplines change with the now limited rights. We investigated through an experimental study whether a reminder of the recent Supreme Court decision influences women's mating strategies in the online environment. From past research, we were able to conclude that women who were looking at pictures of men, for mating purposes, preferred faces that were more masculine in appearance.Thus, leading us to hypothesize that women remined of abortion restrictions would be more selective of men, and would exhibit greater interest in masculine-appearing men. Participants were randomly assigned to read an article reviewing the overturning of Roe v. Wade, or an article reviewing a recent Supreme Court decision on open-carry gun laws, or to read no article. They then examined several fictitious Tinder profiles, varying in facial masculinity, and rated their interest in the men.Data will be analyzed through an ANOVA test in SPSS to determine whether the priming of an abortion article has an effect on female college students mate selection. Considering the recency of the overturning of Roe v. Wade, this study is among the first to document how women's behavior might change in the post-Roe v. Wade landscape.

WIld, Theodore

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
James Moreland,
Theodore Wild

Abstract Name: **Obtaining a complete set of reference DNA sequences for North American bladderworts (Utricularia)**

Carnivorous aquatic plants in the genus Utricularia, known as bladderworts, are fascinating for having complex snap-traps, for lacking roots, and for having branched shoots that function like underwater leaves. There are 19 bladderwort species in North America, including nine that are native to Wisconsin. Bladderwort diversity has been studied in a phylogenetic context before, but curiously the existing data are incomplete for North American species. Specifically, there are gene regions for which not every species has been sequenced, and the missing data make it impossible to identify any one plant using DNA sequence comparisons, or truly to construct an effective phylogeny for the genus.We plan on using the findings of this study to enable new methods for identifying unknown species. Further studies can be conducted once a full catalog of DNA sequences for nuclear and chloroplast DNA is acquired because currently there are species that are missing DNA sequence data for one or more of the gene regions that are commonly used for Utricularia. There are several species in this genus that have not been sequenced for one or more gene regions, and this makes it impossible to identify the plants confidently using DNA sequence data.We used genes from the nucleus (internal transcribed spacer, or ITS) and the chloroplast (rps16 gene, matK gene, rpl20-rps12 intergenic spacer, trnL-F intergenic spacer) to fill in missing data and construct updated phylogenetic trees for Utricularia. These regions were chosen because they have already been sequenced for a large number of Utricularia species, as part of a phylogenetic study of the genus. For the first time ever, we confirmed close relationships between species pairs (e.g., U. inflata and U. radiata) that could not be compared effectively before.

Wilhite, Huston

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Mathematics

Author/Contributors:
Aloisius Grzybowski,
Huston Wilhite,
Sam Scholze,
David Larson

Abstract Name: **Signal Recovery from Sampling Erasures**

The Shannon-Whittaker Sampling Theorem guarantees that any band-limited signal with frequency band [−B, B] can be reconstructed using only its sampled values at times from an evenly spaced lattice. That is, the signal f is completely determined by its sampled values on the lattice, giving us a discrete (digital) representation of an analog signal. Human hearing is limited to frequencies within B = 20,000 Hz; therefore, band-limited signals are ubiquitous in signal processing. Sampling erasures occur when some of the sampled values are omitted or erased in the transmission of the signal. A new algorithm was recently developed that utilizes finite matrix computations to reconstruct a signal from sampling erasures. In this poster, we will discuss this reconstruction and demonstrate several numerical applications. Moreover, we will present updated bounds to prove that the reconstruction procedure is stable under fairly mild assumptions.

Wilkins, Kristen

Institution: *VA - Longwood University*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Kristen Wilkins

Abstract Name: **Chimeric PD1 Expressing T cells as a Therapy for Pediatric Osteosarcoma and Rhabdomyosarcoma**

Currently, the 5-year survival rate for pediatric osteosarcoma and rhabdomyosarcoma is 68% and 70-90% respectively. Unfortunately, the available treatments for these pediatric cancers have many harmful side effects including nausea, vomiting, fever, pain, infections, and exhaustion. Therefore, a new treatment to increase survival and reduce side effects is desperately needed for children with these cancer types. Using immune cells to treat cancer is quickly becoming a new option. One type of immunotherapy uses chimeric antigen receptor expressing T cells (CAR T cells). CARs are modified receptors that use genetic engineering to create a novel receptor that targets tumor-associated antigens and enhances T cell responses. We developed a CAR, chimeric-PD1(chPD1),with the Programmed Death 1 (PD-1) receptor as the tumor-targeting domain attached to CD3 zeta activation and Dap10 costimulatory domains. Since the ligands for the chPD1 receptor are expressed on most tumor types and not on healthy cells, they are ideal for CAR T cell therapies.Previously, chPD1 T cells were shown to effectively treat murine models of pancreatic, kidney, colon, prostate, and other cancers. The purpose of this study was to testthe anti-tumor efficacy of chPD1 T cells against murine pediatric osteosarcoma and rhabdomyosarcoma. Flow cytometry and RT-PCR were used to determine thatpediatric osteosarcoma and rhabdomyosarcomacell lines expressed PD-1 ligands. Therefore, these tumor cells were potential targets for our chPD1 T cells. Using LDH cytotoxicity assays, we demonstrated that chPD1 T cells increased lysis of tumor cells compared to control T cells. ELISAs and LEGENDplex assays were used to assess cytokine secretion by chPD1 T cells. For all tumor types tested, chPD1 T cells secreted pro-inflammatory cytokines, including IFN-γ, TNF-α, and GM-CSF, but did not secrete the anti-inflammatory cytokine IL-10. Therefore, chPD1 T cells could be a novel treatment forpediatric osteosarcoma and rhabdomyosarcoma

Wilkinson, Megan

Institution: *AZ - Northern Arizona University*

Discipline: Biology

Author/Contributors:
Alexanda Gibson *Jessica Guzzo* *Emily Luberto*
Meagan Owens *Katrina Urrea* *Megan Wilkinson*
Karen Haubensak

Abstract Name: **How can ponderosa pine seedlings be propagated to improve drought resistance in the field?**

Ponderosa pine, a widespread species in the western US, is a valuable species economically and environmentally. The preservation of this species is important for the ecological health of many forests due to increased temperatures, drought, and frequency of forest fires. Reforestation efforts following fire and timber removal often fail because seedlings propagated in greenhouses are not resilient to stressful field conditions. To increase seedling field survivorship, drought resistance, and to decrease mortality rates, we implemented a number of treatments in the greenhouse during the initial propagation. The treatments were a manipulation of water supply and different types of fertilizer, tested with seeds collected from varied elevations. After threemonths of growth in the greenhouse under these treatments, we measured height and both shoot and root biomass of the seedlings. We also measured days to mortality on a subset of the seedlings. Seedlings subjected to drought treatment and amino fertilizer grew shorter but survived longer. These seedlings allocated more biomass below ground, which likely contributed to their longer survivorship in the days to mortality test. However, despite the potential benefits these treatments conferred to seedlings in the greenhouse, all seedlings experienced nearly 99% mortality after they were outplanted to a nearby field site. We suspect that most of this mortality was due to frost-heaving, a process whereby seedlings can be pushed out of the ground during frost-thaw cycles that occur in soils in the winter, and is exacerbated by the creation of bare patches of soil around the seedling during planting.

Wilkinson, Mieke

Institution: *BRA - Oswaldo Cruz Foundation*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Mieke Wilkinson,
Hanspeter Frei

Abstract Name: **Topology Optimization of Ceramic-Metal Composites for Implant Design**

A growing aging population is increasing the demand for total joint replacement for the hip and knee. In modern hip and knee metal implants, ceramics play an important role in implant fixation through bone ingrowth and wear resistance. Unfortunately, the brittle nature of ceramics significantly limits its use. This undergraduate research project is focused on finding an innovative approach to enhance the properties of ceramics used in total joint replacements. Ceramics and bio-glass have been shown to have excellent biocompatibility but poor physical properties, often failing by fracture under tensile and compressive loads. In contrast, metals are known for their impressive physical properties but lack the osteoinductive properties or wear resistance of ceramics. A composite of these materials maximizes the benefits to the patient while simultaneously reducing the risk of long-term medical complications.The study aims to apply multi-material topology optimization to create a simple part made of a ceramic-metal composite that maximizes its load-bearing capabilities. Topology optimization will be used to determine the distribution of the ceramic within a metal matrix to limit the tensile stresses in the ceramic phase.The study is focused on two specific combinations: bioglass with titanium to enhance osteoinductivity and zirconia with cobalt-chrome to enhance the wear resistance of joint surfaces. The multi-material topology optimization will be performed using Finite Element Analysis (FEA) in ANSYS, a Computer Aided Engineering software package. A BeAM Modulo 250 directed energy deposition printer will be used to produce the prototyped parts. This study is relevant to applications such as ingrowth stimulation for spinal fusion cages and knee and hip replacements.

Wilkinson, Sam

Institution: *OK - Oklahoma State University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Sam Wilkinson

Abstract Name: **Furry Spotting in the World of Graphic Design**

Anthropomorphic animals or “furries” have been seen throughout graphic design history. Anthropomorphic references humanistic qualities, which characterizes furries as animals that have human characteristics, such as the abilty to walk, talk, and think as a human does. While the term "furry" has been only recently coined as a term, the ideals behind these characters have been around since time began. In ancient Egypt, there were many gods to rule over the land -many of which inhibited traits that would classify as an anthropomorphic animals (as many of them only had the head of an animal, while few others inhabited more features of the animal and only the mind of a diety.) More places these anthropomorphic animals have been seen is in native american lore. Stories passed down from one generation to the next of animals that have inherantly humanistic qualites have been used to teach lessons for many years. The animals in this lore exhibit human traits much as the furries seen in ancient Egyptian times. Along the Native American lines, many see animals as guides, with wisdom unfathomable to help teach those around them, giving them humanistic thinking capabilites. While furries have been seen pushing Graphic Design forward, they are far from separated from the trade. Many furries study graphic design and seek careers in it as they go hand in hand. Mordern examples of furries in graphic design can be seen in many people's favorite mouse -Mickey Mouse- an iconic symbol that has driven graphic design forward in and of itself.

Wilkinson, Trevor

Institution: ***WI - University of Wisconsin-Platteville***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Trevor Wilkinson,
Hannah Fliss

Abstract Name: Measurements of Body Composition in Division III Men's Cross Country Runners During a Competitive Season

INTRODUCTION: Body composition is an important measurement for athletes such as cross-country (XC) runners who expel a significant amount of energy during training and competition. Maintaining a healthy body composition could be the difference between getting injured or competing at the highest level. Therefore, the purpose of this study was to examine the body composition of Division III men's XC runners during a competitive fall season. METHODS: Twenty-three male collegiate XC runners (age- 19.3 ± 1.4 years, height- 179.7 ± 10.0 cm, body mass- 68.3 ± 6.9 kg) completed dual-energy x-ray absorptiometry exams on three occasions during the fall season, pre-season (T1), mid-season (T2), and post-season (T3). Body mass, fat mass, lean mass, percent body fat, bone area, bone mineral content, and bone mineral density were analyzed. Data were analyzed using a repeated measures analysis of variance. RESULTS: Body mass significantly increased from T1 to T2 and T3 (0.05), with no differences between T2 and T3. Lean body mass significantly changed across the season (p = 0.003) with T2 being significantly greater than T1 and T3 (0.05). Fat mass, bone area, bone mineral content, and bone mineral density did not change across the season (0.05). CONCLUSION: The results from the current study suggest Division III men's XC runners can maintain a favorable body composition across a competitive season. Increasing lean tissue, while maintaining fat mass, and bone health are important for a runner to be successful. Often athletes at the Division III level lack education and nutrition to support positive performance. However, the sample of subjects we tested suggests athletes at this level can be successful and maintain a healthy body composition with limited resources.

Williams, Audrey

Institution: ***WI - University of Wisconsin-Stout***

Discipline: Mathematics

Author/Contributors:
Audrey Williams,
Anna Hansen

Abstract Name: Using Mathematical Modeling to Increase Crop per Drop

Chippewa Valley Bean (CVB), located in Menomonie, Wisconsin is the world's largest producer of dark red kidney beans. There is limited research available on dark red kidney beans as they account for less than 1 % of the nation's agricultural land use. CVB agronomists asked, "How much water is required to grow one hundred pounds of dark red kidney beans?" There are many factors that impact the answer to this question. This project focuses on soil characteristics while holding temperature and nutrients fixed. Plant disease and weather-related damage is also neglected.A mathematical model consisting of a system of three coupled differential equations was developed to simulate water use through the soil, plant canopy, and reproductive biomass. The model predicts a kidney bean plant's reproductive biomass at the end of the growing season. Numerical experiments show how much water is needed via daily irrigation to achieve maximum yield for given soil characteristics. The intended use of this model is to help agronomists advise growers on the efficient use of water resources to obtain maximum kidney bean yields.

Williams, Elise

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Music

Author/Contributors:
Tessa Ferry *Christina Westman* *Elise Williams*, *Megan Gawlitta*

Abstract Name: **Music Listening Activities with Adaptations for People who are Neurodiverse**

This presentation will provide a description for how people who are neurodiverse hear music differently than others and therefore respond differentially. It will include a neuroscience description of what happens in the brain to allow communication skills to develop and provide meaningful interaction with others. Perspectives from a college student with autism spectrum disorder (ASD) who became interested in this area of research while taking the college course Influence of Music on Behavior participated with students who were neurotypical and their professor to test out different styles of music and identify responses. Descriptions of the funding will be shared, including considerations of properties of music and their corresponding effects on perceptions of people who are neurodiverse. Findings were also implemented in a group home with residents with ASD who responded well to the specific properties identified. A description of eight sensory systems, sensory overload, and co-occurring health conditions will be described along with an explanation about communication development. Considerations for minimizing agitation and maximizing positive responses will be included for these eight sensory systems: proprioceptive, interoceptive, visual, tactile, auditory, vestibular, olfactory, and taste.People who are neurodiverse respond well to ascending arpeggios, louder volume, detached and staccato style, full chords, and complex and accented rhythms more than to lyrical, flowing melodies, although responses are unique for each individual. A discussion of theories related to “Overlearning Phenomenon” and Broken Mirror Hypothesis will be included related to mirror neurons and applications for teaching music. Hyperactive responses based on circuitry signaling patterns overpowering other functions will be described within the context of striatal loops. Perspectives of people who are neurodiverse on different types of intervention usually used will be included. Adaptations based on national standards for music and social justice will be provided.

Williams, Hannah

Institution: *FL - Jacksonville University*

Discipline: Biology

Author/Contributors:
Hannah Williams,
Samantha O'Keefe,
Luke Stoeber

Abstract Name: **Effects of Microplastics Exposure in the Sea Anemone, Exaiptasia pallida**

Microplastics are one of the most common forms of pollution found in marine environments, and their small size (5mm) allows them to be easily ingested by marine biota. Exaiptasia pallida is a solitary anemone native to the western Atlantic that harbors symbiotic dinoflagellates like those of reef building corals, and passively feed on prey such as brine shrimp. To assess the influence of microplastics on E. pallida, a series 48-hour laboratory experiments were conducted in which symbiotic and aposymbiotic anemones were exposed to 100 µm polystyrene microplastic beads in the presence and absence of brine shrimp. Ingestion and egestion of microplastics, and photosynthetic parameters were measured at 3, 24, and 48 hours following initial exposure. At 48 h, anemone tentacles were harvested and analyzed for algal symbiont density. Physiological stress in the anemones was investigated via assessment of antioxidant enzymes, superoxide dismutase, catalase, and glutathione peroxidase. E. pallida consumed polystyrene beads in every microplastic treatment, and both presence of brine shrimp and symbiotic state significantly increased microplastic ingestion. Aposymbiotic anemones ingested more microplastics than symbiotic anemones, suggesting that bleached anemone communities may be more susceptible to microplastic pollution.

Williams, Lucas

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Psychology/Neuroscience

Author/Contributors:
Blake Vander Weide *Lucas Williams* *Sara Multhauf*
Sean Jordan

Abstract Name: **EFFECTS OF ATYPICAL ANTIPSYCHOTICS IN RATS TRAINED TO DISCRIMINATE BETWEEN 22 AND 2 HOURS FOOD DEPRIVATION**

In humans, weight gain is a side effect of atypical antipsychotics. In rats, clozapine increases eating, but reduces food-related, operant behaviors. Ziprasidone has smaller or no effects on eating in rats. Given the short half-life of clozapine in rats, we tested the effects of acutely administered clozapine and ziprasidone on the discriminative stimulus effects of food deprivation. Male, Sprague-Dawley rats were trained to discriminate between 22 and 2 hrs(hours) of food deprivation in a two-lever operant task. Under 22 hrs deprivation, left lever presses were reinforced by a 45 mg food pellet. Right lever presses were punished with 8 seconds of darkness. Under 2 hrs deprivation conditions, the contingencies were reversed. Training sessions lasted until 10 reinforcers were earned or 15 minutes elapsed. Training continued until rats emitted 80% or greater condition appropriate responding before the first reinforcer was earned for 8 out of 10 sessions. After acquiring the discrimination (M = 71, SEM = 6 sessions), subjects were food deprived for 2 or 22 hrs and injected subcutaneously with either clozapine (1.0-5.6 mg/kg), ziprasidone (0.32-1.0 mg/kg) or vehicle (1.0 ml/kg). For the 5 minute or 5 reinforcer test sessions, responses toward either lever were reinforced under the FR 15. Test trials were conducted every 15 min for 2 hrs. After test session, food intake was recorded for 1 hour. Clozapine and ziprasidone did not induce hunger-like responses under 2 hrs deprivation. After 22 hrs food deprivation, clozapine (1.0-5.6 mg/kg) significantly reduced hunger-like stimuli induced by 22 hr deprivation, whereas ziprasidone had no effect. Under both deprivation conditions, clozapine decreased food intake, but ziprasidone did not. These data indicate clozapine decreases feeding-related behaviors in rats. Atypical antipsychotic medications have different effects on food-related behaviors in rats and humans

Williams, Maya

Institution: *OK - University of Central Oklahoma*

Discipline: Education

Author/Contributors:
Maya Williams

Abstract Name: **Power Within a Broken System: An Intersectional Examination of the Central Oklahoma Special Education System**

In the United States, Oklahoma's subpar public education system is ranked #45. Thus, it is critical to examine the public education systems' structure and programs. My research hones in on the special education system of publicly funded K-12 schools in Central Oklahoma. Through an intersectional approach, I will identify and examine these four structures of power (i.e. interpersonal, disciplinary, cultural, and structural) in K-12 classrooms. With this approach, I aim to answer key questions regarding which identity markers are most likely to receive a diagnosis/referral to special education.By gathering oral histories from parents and special-education educators, I am able to explore intersectional identities and unique situations. Particularly, the personal experiences of parents navigating Oklahoma's complex special-education system. My research will combine existing literature and new findings to examine the relationship between Oklahoma's special education framework and educational outcomes. These trends will assist in identifying marginalized student identities and the origin(s) of Oklahoma's stark education disparities.My research provides crucial insight on the interconnectedness of power, intersecting identities, and educational outcomes. My research can assist legislators and administrators create effective education policies, reporting systems, and plans to better support students. Furthermore, this research has the potential to help alleviate segregation in classrooms based on intellectual capability or trauma-informed behaviors. I hope to continue this research by examining educational legislation pertaining to special education systems in Oklahoma.

Williams, Maya

Institution: *PA - Duquesne University*

Discipline: Biology

Author/Contributors:
Maya Williams,
Jessica Packard,
Jill Dembowski

Abstract Name: **Elucidating the function of Cellular PCNA in HSV-1 Infection**

Proliferating cell nuclear antigen (PCNA) is a cellular protein that adds processivity to cellular DNA polymerases during DNA replication and tethers DNA repair proteins to replicating cellular DNA. Previous research has found that PCNA associates with herpes simplex virus type 1 (HSV-1) replication forks during viral DNA replication. However, the function PCNA plays during HSV-1 infection is unknown. We hypothesized that PCNA helps HSV-1 DNA replication and viral DNA repair. Two inhibitors were used to inhibit PCNA to determine its role during viral infection. Two inhibitors of interest, PCNA-I1 and T2AA, block PCNA DNA binding and protein-protein interactions, respectively. Inhibitors were incorporated into cells before viral infection to inhibit PCNA functions followed by plaque assays to quantify viral yield. We found that PCNA-I1 had a greater effect in decreasing viral yield than T2AA. We further tested the effect that both inhibitors have on different cells or virus strains. We found that regardless of the viral strain or cell type used, PCNA-I1 reduced viral yield more than T2AA. We therefore conclude that PCNA is important for viral infection and that inhibition of PCNA binding is more detrimental to infection than blocking specific protein-protein interactions. Next, to determine whether the time the inhibitors are added affect the infection cycle, we performed a time of addition experiment and measured viral genomes per cell produced. We found that PCNA-I1 inhibits replication when added before the onset of viral DNA replication. PCNA-I1 could also block ongoing viral DNA replication when added later in the viral life cycle. Our long term goal is to pinpoint the specific role of PCNA in HSV-1 infection.

Williams, Nicholas

Institution: *NC - Elon University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Nicholas Williams

Abstract Name: **Use Your Words: Impact of a Driver's Linguistic Framing on the Outcome of a Traffic Stop**

While a traffic stop is supposed to be completely objective, there is potential for biases to skew the outcome. Many authors have studied factors ranging from race, to age, to gender in order to see if a correlation exists between these variables and the result of a traffic stop (Schafer et al., 2004; Smith; Petrocelli, 2001; Gaines, 2006; Dixon et al., 2008). It has been found that these variables, as well as many others, have some sort of effect on the outcome. One variable that has not been studied much in the context of a traffic stop is language– more specifically, what the officer or driver chooses to say. The way that language is framed can have an effect on people's behavior (Banks et al., 1995, Landau et al., 2009). Previous research on this topic has found that an officer's language changes depending on who they have pulled over (Voigt et al., 2017). This study focused on what the driver says, and how it could potentially affect their traffic stop result (e.g. getting a warning instead of a ticket). Specifically, the driver's language was manipulated. The independent variables were: level of respect (respectful or disrespectful), level of agreement (agree or disagree), and goal framing (gain a positive result, avoid a negative result, or neutral). The language used in the experiment was first assessed through a manipulation check with a convenience sample crowdsourced via social media. The participants for the experiment were 500 mTurk workers from the United States. Data collection was recently completed and analysis is underway. We expect to find that respectful, agreeing language, and positive goal frames lead to more favorable (i.e., less severe) traffic stop outcomes.

Williams, Peyton

Institution: ***MO - Truman State University***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Peyton Williams,
Ainsley LaMore,
Bill Miller

Abstract Name: Novel Inhibitors of HIV Viral Infectivity Factor Using Computational Design and Analysis

Human Immunodeficiency Virus (HIV) affects 38 million individuals worldwide. Acute infection appears flu-like, consisting of fever, chills, muscle aches, sore throat, swollen lymph nodes, rash, and night sweats, although infection can be latent. Viral Infectivity Factor (VIF), an HIV protein, complexes with Cullin-5 and Elongin C; B to signal for the degradation of APOBEC3G, a cytidine deaminase that defends host cells against retroviral infections. Exploration of small molecule inhibitors in silico provides a “square one” for potential drug design. Commonly, molecular databases such as ZINC are utilized to find druggable molecules with favorable docking scores. The use of DOCK6 de novo design allows molecules to be generated from scratch using the target protein’s binding pocket. The best of the resulting molecules are simulated using AMBER16 Molecular Dynamics and analyzed using MMPBSA. Visualization of the interactions between the potential drugs and the VIF binding site allows favorable interactions to be noted, edited, and improved upon. More potent ligands from the DOCK6 de novo subset remained in the binding pocket for the entire 100 nanosecond simulation, while the less successful inhibitors displayed unfavorable interactions and dissociated from the binding pocket. Structural analysis and energy calculations were performed to rank the drug molecules based on their potential to inhibit Vif. Using one of the more successful ligands, detailed analysis of favorable intermolecular forces could be utilized to create a drug scaffold. Using the standard fragment library of DOCK6, improvements can be made to an existing druggable molecule. Recovering the immune defense against HIV and other retroviruses is a step closer to eradicating the disease.

Williams, Samantha

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Grace Gunderson,
Samantha Williams

Abstract Name: The Assessment of Aging Self-Efficacy: A Comparison of Persons in Rural and Urban Environments

Extant research shows that age-related physical and mental health outcomes often differ between persons based on the degree of urbanization of their living environment. These health outcomes differ in relation to factors such as socioeconomic status, health care access, nutritional intake, socialization opportunities, etc. However, the potential role of aging self-efficacy has not been explored. Self-efficacy itself has been studied in various adult populations, but only in the sense of their current life situations. A sample question related to memory performance might be “How able are you to remember life events from the past week?” The current study, however, will investigate prospective aging self-efficacy, which is a person’s sense of how able they will be to age healthily. A sample question (directed at a younger adult) might be “How able will you be to remember life events from the past week when you are 80 years of age?” Additionally, this mixed-methods study will investigate the reasons adults hold the beliefs they do.For example, a person answering the previous question might say that they believe they will not be able to remember the events of the past week when they are 80 years of age because their older relatives were unable to do so; or they may hold generally negative stereotypes about aging (e.g., all older adults have a bad memory).We hypothesize that aging self-efficacy will differ between undergraduate participants based on the degree of urbanization of their childhood hometowns such that those from more rural environments will feel less able to age healthily compared to those from more urban environments.Additionally, we expect that those who expect more negative aging outcomes will report feeling less in control of their aging process and hold more negative stereotypes about aging than those who expect more positive aging outcomes.

Williams, Skarlet

Institution: *NY - Columbia University*

Discipline: **Computer Science/Information Systems**

Author/Contributors:
Brian Daley,
Skarlet Williams,
Janet Jiang,
Edoardo Serra,
Marion Scheepers

Abstract Name: **ATT&CK Technique and Tactics Detection from Noisy Cybersecurity Sensors**

Enterprises relying on large-scale networks of digital infrastructure must protect their assets from cyber attackers. Cybersecurity sensors provide one solution: detecting and monitoring adversary activity, collecting network information, and determining the presence and classification of an attack. Unfortunately, real-world sensors occasionally produce undesirable results, namely falsely activating when no attack is present or not activating when an attack is present. These misdetections can be catastrophic, and solutions to circumvent this "noise" are essential. In our research, we propose a method for using noisy cybersecurity sensors to deconstruct an adversary's profile of the techniques and tactics they used in a cyber attack. We use the Common Attack Pattern Enumeration and Classification (CAPEC) database with the ATT&CK\ ontology to create relationships between attack techniques. Since many techniques require a prerequisite attack technique, also known as a dependency, we use probabilistic modeling to simulate random walks to create adversary profiles. Using the noisy sensors as an input to a graph convolutional network (GCN) algorithm, we emulate the noisy sequence of attacks an enemy agent uses. Using products from this research, enterprises can ascertain the likely paths of attackers and build up defenses to better keep their valuable assets safe.

Williams, Weston

Institution: *TN - Middle Tennessee State University*

Discipline: **Biology**

Author/Contributors:
Weston Williams *Doofan Eke* *Jordan Jungen*,
Anna Arnold *Keely Obrien* *Tony Johnston*,
Seockmo Ku

Abstract Name: **Rapid Foodborne Pathogen Detection via Tangential Flow Nano/Microfilter Bioseperation System**

Early detection and of pathogens is essential for preventing and mitigating the occurrence of foodborne illness and food poisoning outbreaks. Many harmful pathogens that contaminate popular food arrise from previously contaminated samples found in soil and irrigation water. The most rapid USDA/FDA/ISO approved detection protocols for the detection ofSalmonella, Escherichia coli, andListeria spp.require 1-3 days to complete. Most of the time is devoted to a lengthy 96 hour enrichment process which is vital for rapid detection to locate these harmful pathogens. Therefore a new method to detection of pathogens must be devised that preferbly decreases the already substantial time required to enrich organic samples. Microfiltration of organic material is a proposed solution that will decrease volume of sample sizes and concentrate the microbial material in the sample. The goal of this research is to develop a novel,hydrophilic nano/micro membrane-based microbial bioseparation protocol that shortens the detection time of target microorganisms and increases the sensitivity of the test to levels currently only possible via PCR and immunosensing detection methods. Through this process concentration of enviormental samples using a nano/micro membrane-based machine will reduce the substantial time required for the lengthy enrichment process. The procedure is targeted to detect food-borne pathogens in less than 10 hours and to a 1 CFU/g sensitivity of target bacteria. Therefore reducing labor intensive testing and detection time signifcantly while lowering sensitivity rate to these levels has the potential to significantly reduce food poisoning outbreaks, help improve consumer health, and improve the trust consumers put into food manufacters.

Williams, Yancey

Institution: *AL - University of Alabama at Birmingham*

Discipline: Biology

Author/Contributors:
Yancey Williams,
Tomasz Nawara,
Jie Yuan,
Alexa Mattheyses

Abstract Name: **Computational Modeling of Endocytic Vesicle Formation imaged by Simultaneous Two-Wavelength Acial Ratiometry**

Clathrin-mediated endocytosis (CME) facilitates the internalization of extracellular cargoes. However, how clathrin-coated vesicles (CCVs) form remains unclear due to the limited resolution of live-cell fluorescence microscopy and the need for sample fixation in electron microscopy. To bridge this gap, our lab developed Simultaneous Two-wavelength Axial Ratiometry (STAR) microscopy that leverages the wavelength-dependent properties of Total Internal Reflection Fluorescence (TIRF) microscopy. Dual-tagging a protein of interest with two spectrally separated fluorophores allows STAR to measure the intensity ratio and retrieve the z-position of the protein. Although the exponential decay of the evanescent wave is critical for STAR, it results in an uneven excitation of fluorescently tagged proteins. This will bias STAR measurements when dual-tagged proteins are distributed on a 3D object such as CCVs. To understand the accuracy of STAR for studying vesicle formation, we used mathematical modeling. We represented the CCV as a monodisperse sphere and used the STAR equations to calculate vesicle height (Δz) and compared it to the “ground truth” center of mass (CM). We investigated the influence of vesicle formation, radius, the number and distribution of proteins, the distance of the vesicle from the plasma membrane, and Poisson noise on STAR. This mathematical model of STAR microscopy assesses how the Δz measured by STAR compares to the ground truth. The theoretical findings will be used to relate experimental Δz results to vesicle morphology and eventually to develop a 3D dynamic model of CCV formation from our experimental data.

Williamson, Alyssa

Institution: *OK - Southern Nazarene University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Alyssa Williamson,
Ronald Wright

Abstract Name: **Religion and Science: Growth vs. Security**

There is a commonly held belief that religious people are not inclined to see high compatibility between religion and science, but this may not be the case. In addition, the psychological functioning of religious beliefs may impact this compatibility or conflict. A security-focused (SF) religious orientation prioritizes certainty and security, while a growth-focused religious orientation prioritizes questioning and doubt. This study aims to look at the correlations between religion and science compatibility and the implications they have on growth and security within individuals. In light of that, the following hypotheses were proposed: 1) the Defensive Theology Scale (DTS) will be negatively correlated with Quest Scale (QS), 2) Security-focused (SF) religious orientation will be positively correlated with religious identity, human-world interactions (conflict compatibility subscale scale), and negatively correlated with explanations (conflict compatibility subscale scale), 3) Growth-focused (GF) religious orientation will be positively correlated with explanations (conflict compatibility subscale scale), scientific identity, and with human-world interactions (conflict compatibility subscale scale), 4) Explanation's subscale will be predicted by negative DTS scores and positive QS scores, 5) Human-world interactions subscale will be predicted by positive DTS scores and QS scores. The results of this study will be discussed in light of the existential tradeoffs involved with the different religious orientations.

Williamson, Ellie

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Biology**

Author/Contributors:
Victoria Carlsten,
Grace Wainwright,
Ellie Williamson,
Sayaka Mochizuki,
Chelsea Ortiz-Jimenez,
Jennifer Smith

Abstract Name: **What?s all that noise about?: Alarm-calling in California ground squirrels**

Many socially-living diurnal animals have evolved vocalizations known as alarm calls as a mechanism for reducing predation. California ground squirrels are a major prey species for coyotes, rattlesnakes, and birds of prey, but must also cope with human foot traffic and anthropogenic noise. This project characterizes the acoustic structure, duration, ecological context, and timing of these calls produced by ground squirrels. Combining naturalistic and automated acoustic monitoring, we describe the extent to which humans and dogs versus natural predators trigger naturally-occuring alarm calls in California ground squirrels across the 24-hour cycle. First, from naturalistic observations as part of my Long-term Behavioral Ecology Project on California ground squirrels at Briones Regional Park, we document that calls are associated with natural predators but not humans visitors. We also describe the contexts in which squirrels produce either a short, non-repetitive vocalization or a longer repetitive bout of alarm calls. Second, we present data from acoustic monitoring devices and camera traps that confirm ground squirrels mainly call during daylight hours, a time of day before coyotes emerge at the site. Our data confirm the alarm-calling “schedule” for these animals and offer new insights into not only what triggers them to call but also the temporal patterning of fear responses over time.

Williamson, Lizzie

Institution: *DC - American University*

Discipline: **International Studies**

Author/Contributors:
Lizzie Williamson

Abstract Name: **A Balancing Act: Reconciling the Relationship Between Tourism and Sustainable Water Management Strategies in Caribbean Island Countries**

The regional growth of the tourism industry has allowed many Caribbean island economies to compete on the global economic stage, yet mass tourism has also exacerbated existing resource scarcity challenges, particularly on islands with limited freshwater. This research project will explain how water-scarce Caribbean island countries have balanced sustainable water use and management practices with the economic potential of their tourism sectors. Through a case study-based framework analysis, I will examine the United Nation’s Integrated Water Resources Management (IWRM) approach on the water-scarce island country of Antigua and Barbuda. I will evaluate the ways the Antigua and Barbudan government has considered the tourism sector in its existing IWRM strategy, with a special focus on the thematic areas of social equity, economic efficiency, ecological sustainability, and participatory planning. I will assess official proposals and reports produced by Antigua and Barbuda’s government outlining their IWRM design and conduct semi-structured interviews with key government officials to analyze the country’s progress toward its implementation, especially within the tourism sector. I aim to identify the country’s successes and failures in integrating tourism into its IWRM approach and build recommendations for adapting this framework to encourage more sustainable interactions between water and tourism in the Caribbean. These findings are relevant as climate change-based impacts are expected to place additional stress on the Caribbean’s existing freshwater resources, warranting new context-specific perspectives on sustainable development strategies forisland countries.

Willis, Katherine

Institution: *AR - Arkansas State University*

Discipline: Biology

Author/Contributors:
Katherine Willis,
Mason Rhodes

Abstract Name: **Improving Sustainability Awareness with K-12 Citizen Scientists Using Authentic, Interdisciplinary Project-Based Learning to Support an International Space Station Experiment**

Plastic waste disposal is a serious environmental challenge that is important to incorporate into K-12 curriculum. While the 3R's (Reduce, Reuse, Recycle) are commonly taught at this level, empowering K-12 students to contribute meaningful and authentic sustainability research data in efforts to increase awareness is needed. A potential plastic waste solution is Galleria mellonella (waxworm), a common beehive pest that can be easily incorporated into curriculum for K-12 classrooms. Waxworm larvae are capable of biodegrading low-density polyethylene (LDPE) films (e.g sandwich bags) into a reusable product, ethylene glycol. The A-State SPOCS (Student Payload Opportunity with Citizen Science) team was awarded a NASA grant to assess the plastic biodegradative properties of waxworm larvae in a microgravity environment on the International Space Station. A major component of this grant was partnering with Citizen scientists (CS) from two Arkansas K-12 intermediate schools who actively conducted preliminary experiments. Their classroom efforts optimized conditions for waxworm larvae plastic consumption, calculated mortality rates, and established the ability of waxworms to survive on minimal food stocks (beeswax only). CS contributed important data in establishing waxworm larvae' preference for the plastic type, Ziploc. This data was key to the final design of the ISS experiment and will be presented in various outlets. In addition, CS participated in engineering activities utilizing NASA constraints and independently manufactured the 3D-printed waxworm larvae habitats for the project. In July 2022, our team completed a successful launch of the experiment aboard the NASA resupply mission CRS-25. This project highlights efforts in finding innovative and sustainable waste management solutions for long-term space travel as well as bringing authentic, project-based learning opportunities in K-12 to increase awareness of this pervasive environmental problem.

Willitzer, Alayna

Institution: *IN - Trine University*

Discipline: Biology

Author/Contributors:
Alayna Willitzer,
Dr. Vipin Paliwal

Abstract Name: **Diclofenac Cytotoxicity in Two- and Three- Dimensional Rat Hepatocytes**

The Food and Drug Administration (FDA) heavily regulates pharmaceuticals in preclinical and clinical trials. A current challenge is accurately depicting the occurrence of hepatotoxicity of drugs. Due to related idiosyncratic reactions when the liver metabolizes pharmaceuticals. To determine potential hepatotoxicity, animal testing and two-dimensional (2-D) mammalian cell cultures are utilized. Both are viable options for testing, but animal testing has proven to be expensive, while 2-D monolayer cell cultures do not accurately depict toxicity and efficacy of drugs in vivo. To establish an accurate model of liver damage, three-dimensional (3-D) cell cultures are an alternative option allowing for a more realistic representation of organs in vitro. Diclofenac, used as a model drug, was tested on H4 Rat Hepatoma cells in 2- and 3-D cell cultures. The comparison of 2- and 3-D cell cultures led to a better understanding of how sensitive the liver is to diclofenac. Hepatocytes were treated with varying concentrations of Diclofenac for a period of 24, 48, and 72 hours and analyzed for cytotoxicity. Cell functionality was determined from the quantification of Albumin released using enzyme-linked immunosorbent assay (ELISA) in comparison to total number of cells for 2-D and 3-D cultures exposed to diclofenac. Cytotoxicity assay showed that at a 24-hour period, cells were not exposed to diclofenac for a long enough period to obtain conclusive results. However, at 48 and 72 hours, cell death for 3-D cell cultures ranged from 95% to 105% and 80% to 100%, respectively. 2-D cell cultures demonstrated a cell death at 80% to 90% and 60% to 80% for a 48- and 72-hour period, respectively. Results based on the cytotoxicity allowed for further cell functionality assays. Albumin specific ELISA was performed at 48 hours of drug treatment where the 3-D cell cultures displayed a significantly lower albumin secretion.

Wilson, Ana

Institution: *TX - The University of Texas at San Antonio*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ana Wilson,
Brian Laub

Abstract Name: **Comparison of Untreated Urban Runoff in the San Antonio River versus UTSA?s Bioretention Basins**

The city of San Antonio has experienced a continuous phase of rapid urban growth and development over the last century. One consequence of urbanization is the production of polluted runoff, especially during rain events. To assess the impact of urban water pollution, we tested for salinity, temperature, pH, total suspended solids, overall nutrient composition, and the presence of Escherichia coli and other bacterial coliforms at three different sites along the San Antonio River. Data for the San Antonio River's water quality was also collected from the Texas Commission on Environmental Quality's website and compared to the water quality sampled. Sites differed in terms of surrounding urban populations and land uses. The quality of the water samples from the San Antonio River were compared to water quality retrieved from the inflow and outflow of UTSA's bioretention basin. A detailed analysis is ongoing, but according to the past ten years of water sample data, acquired from the Texas Commission on Environmental Quality's (TCEQ) website, the San Antonio River had a significant amount of nutrients, and bacterial coliforms. In comparison, the inflow samples of UTSA's bioretention basin also had significant amounts of nutrients, and bacterial coliforms, yet the outflow water samples indicated a drastic decrease in these amounts. This study emphasizes the need for the San Antonio River Authority to implement a filtration system to mitigate the high concentrations of urban runoff and to protect the San Antonio River's natural ecosystem.

Wilson, Ezriel

Institution: *TX - The University of Texas at Arlington*

Discipline: Art/Music History

Author/Contributors:
Ezriel Wilson

Abstract Name: **"Great Women of Art and Their Inspiration in My Protest Series: ?The Right to Reproductive Rights- Dear Governor Abbott, I am writing to inform you..."**

On May 21, 2021, we gathered a group of like-minded individuals felt the need to exercise our First Amendment rights and speak out against Texas Governor Greg Abbott's SB 8 bill, otherwise known as the Heartbeat Bill, enacted on May 19, 2021. It was a warm early summer Texas night when we gathered on the square in downtown Waxahachie, Texas. There, I stood with my friends, family members, and people from the community. A small but mighty gathering of voices that wished to be heard. With brightly colored poster boards adorning phrases like "I am a woman, not a womb," seen repeated in 'The Words We Need to Hear' (Figure 1), we circumambulated the courthouse calling out chants crying for an end to this "new normal" we were supposed to accept. The following evening at a show, a friend gave me his insight and experiences on the topic of abortion concerning the Heartbeat Bill, his words touched me so deeply that they motivated me to apply for the IDEAS fellowship. As an IDEAS fellow, I have rendered a series of eight compositions titled 'The Right to Reproductive Rights- Dear Governor Abbott, I am writing to inform you...' in acrylic paint on 16x20 stretched canvases from December 2021 to March 2022. Seven of these paintings are based on the experience and the photographs taken during the protest. The final artwork is based on the friend, his experience, and why accessibility is vital for the young women of Texas. In this paper, I introduce for the reader the topic that drove my inspiration for 'The Right to Reproductive Rights- Dear Governor Abbott, I am writing to inform you...', the individuals involved with its execution, and three great women of art that have influenced different aspects of this series.

Wilson, Hannah

Institution: *CO - University of Northern Colorado*

Discipline: Biology

Author/Contributors:
Hannah Wilson,
Jess Cowie,
Gregory DeKrey

Abstract Name: **Studying the effect of aryl hydrocarbon receptor activation on affinity maturation**

Oral immunization with protein antigens, such as cholera toxin, will result in production of antibodies by intestinal B cells. These antibodies can neutralize the toxin's ability to cause harm. Repeated immunization will increase the average affinity of toxin-specific antibodies over time, a process called affinity maturation. The aryl hydrocarbon receptor (AhR) acts as a sensor of friendly gut microbes and, in so doing, plays a role in moderating gut inflammation. Strong activation of the AhR by drugs and other chemicals can suppress B cell function and antibody responses, but those responses recover over time with repeated immunization. It is currently unknown if affinity maturation also recovers over time after strong AhR activation. To fill this gap in knowledge, we hypothesized that average antibody affinity would decrease over time with repeated immunization, in parallel with antibody levels, after strong AhR activation in mice. Because the AhR is a target for drug therapy to treat autoimmune disease, this work is important for understanding the potential implications of drug therapy.Based on the results of preliminary experiments, we were able to determine that antibody concentration increases as number of inoculations increase, providing a baseline knowledge necessary for future AhR activation experiments.

Wilson, Isabelle G.

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Psychology/Neuroscience

Author/Contributors:
Isabelle G. Wilson *Mikaela J. Miller* *Sara K. Pardej*
Bonita P. Klein-Tasman

Abstract Name: **Performance on Executive Functioning and Attention Measures in Children with Neurofibromatosis Type 1 Compared to Unaffected Controls**

Neurofibromatosis type 1 (NF1) is a neurogenetic condition caused by a pathogenic variant of the NF1 gene. Cognitive problems in executive functioning and attention are prevalent in children with NF1. Executive function is an umbrella term for the cognitive processes that drive goal-directed and self-regulatory behavior. Executive function deficits in NF1 have been identified in the domains of inhibition, working memory, planning, and organization. Attention is the ability to focus one's cognitive resources on a relevant stimulus while ignoring irrelevant stimuli. In NF1, attentional difficulties have been identified in the areas of sustained, selective, divided, and switching attention. This project will examine measures of attention and executive function in children ages 7-11 years with NF1 compared to an age-matched unaffected group. Attention and executive functioning will be assessed using behavioral measures and caregiver rating scales. The Conners Continuous Performance Test-Third Edition (CPT-3) is a computer software-based neuropsychological assessment that yields information about four dimensions of attention: inattentiveness, impulsivity, sustained attention, and vigilance. Dependent measures include: omission errors (missed responses), commission errors (incorrect responses), and variability (speed consistency). The NEPSY-2 Auditory Attention and Response Set subtest (AARS) is an instrument used to assess auditory attention and impulsivity. Dependent measures include: omission errors, commission errors, and inhibitory errors (responses which indicate impulsivity or deficits in shifting). The Behavior Rating Inventory of Executive Function-Second Edition (BRIEF-2), a caregiver rating scale, assesses executive function and self-regulatory behavior. Dependent measures include ratings on scales assessing: behavior regulation, emotion regulation, and cognitive regulation indexes. We will characterize the performance of the NF1 group using descriptive statistics and compare the performances of children with NF1 and unaffected children using independent samples t-tests. We expect the NF1 group will show difficulty in comparison to normative data and to the unaffected group across all dependent measures.

Wilson, Michael Douglas

Institution: *WI - University of Wisconsin-Stout*

Discipline: Psychology/Neuroscience

Author/Contributors:
Michael Douglas Wilson

Abstract Name: **Protect Your GPA From COVID-19: The Power of Grit and Resilience**

Academic performance concerns were prompted by COVID-19 and the transition to class policies like online learning or wearing masks. Previous research identified resilience and grit as protective factors for academic outcomes. Resilience refers to an individual's ability to bounce back following an aversive event. Grit refers to the ability to persist toward the completion of long-term goals. Limited research has assessed whether these factors can predict academic performance during COVID-19 or whether they can mitigate student concerns about COVID-19. The current study seeks to fill this gap in the literature by examining the correlation between resilience and grit in relation to perceived academic performance, actual academic performance, and COVID-19-related concerns. The current study hypothesized that grit and resilience would positively predict students' GPA and perceived academic performance and negatively predict students' academic and job-related concerns about COVID-19. College students (n = 48; 64.6% women; 89.6% White) completed a survey assessing their perception of their academic performance, perception of the impact of COVID-19 on their academics and future job prospects, GPA, grit (with subscales of consistency of interest and perseverance), resilience, and demographic information. We found through a series of Pearson's r correlations that the persistence subscale of grit was positively associated with perceived academic performance (r = .33) and GPA (r = .29). The consistency of interest subscale of grit was positively correlated with GPA (r = .33) and negatively correlated with concern for future job prospects (r = -.36). Resilience was only found to be positively correlated with perceived academic performance (r = .61). The current results are consistent with past research on grit and resilience and suggest the need for additional research on the impact of grit-promoting training and developing resilience skills for improving academic performance under sustained adversity.

Wilson, Thomas

Institution: *NC - Elon University*

Discipline: Mathematics

Author/Contributors:
Thomas Wilson,
Lauren Hill,
Mary Hermes,
Griffen Pace,
Hwayeon Ryu

Abstract Name: **Mathematical Modeling of Immune Response to SARS-CoV-2**

In response to the profound impact the COVID-19 pandemic has had on society, the mathematics and broader scientific community has focused considerable research efforts to understand the spread of the virus. Despite a tremendous volume of research in this area, how the human immune system responds to SARS-CoV-2 has not been yet fully understood due to limited analysis of the experimental or clinical information to date. Mathematical models that account for the interaction between SARS-CoV-2 and the human immune system will improve the scientific community's ability to analyze the vast amount of data available. The model we developed helps in understanding the role of various molecular pathways in successful viral clearance and the key mechanisms responsible for disease severity exhibited by some patients. Specifically, our in-host model explicitly represents the virus, innate immune cells, selected cytokines, and their interactions. These interactions are formulated in a system of coupled ordinary and delay differential equations. We conduct parameter estimation based on experimental data and literature review and investigate qualitative and quantitative behaviors of the model via numerical simulations. Using this model, we then determine the implications of variation of parameters by sensitivity analysis. Our model demonstrates key aspects of immune response to SARS-CoV-2, specifically its sensitive pathways, which might be responsible for differences in disease severity exhibited by COVID-19 patients. Our preliminary results of the mechanisms involved in COVID-19 pathology could identify several therapeutic targets that would provide hypotheses to be tested clinically, thus, serving as a foundation for the development of evidence-based therapeutic strategies.

Wilson, Trinity

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Oksana Laura Horstman,
Ethan Ahlbrecht,
Trinity Wilson,
Danielle Zahn

Abstract Name: **Investigation of Ventilation and Air Quality in Classrooms**

The transmission of the coronavirus can be greatly impacted by indoor ventilation and air purifiers according to the U.S. Environmental Protection Agency and other public and private institutions and researchers. The concentration of aerosols in the air that contain the virus can be reduced by proper ventilation systems, which circulate and filter the air for increased quality. Aerosols with a diameter of2.5µm or lessare a possible carrier of SARS-CoV-2. PM 2.5 pollution may also increase the cellular expression of ACE2, associated with greater viral susceptibility. Ventilation to reduce PM 2.5 levels addresses both risks. Tests using incense as an indicator before, during, and after burning were used to see how quickly the ventilation in the rooms was able to remove excess PM 2.5. A calibrated DustTrak II monitor was used to record particulate matter, then Honeywell HEPA air purifiers were emplaced to see if further purification would aid in ventilation compared to only an HVAC system. Room air exchange rates (ACH, hr-1) were calculated using a spreadsheet by Jimenez at UC-Boulder. ACH rates in a small (15 person) meeting room were 5.88 hr-1 with HVAC alone and 16 hr-1 with two added air purifiers. Corresponding rates in an average (35 person) classroom were 9.62 hr-1 and 12.0 hr-1 with a single purifier. In this case, HVAC and air purifier coverage was 1.25–2.72 times as efficient as just HVAC coverage. Results for local weightlifting rooms are currently being investigated and will be included. A limitation of this research was the occasional pooling of incense smoke near the opening of the air monitor leading to a temporary spike in PM 2.5 levels. Use offans can address this issue. HEPA air purifiers reduce PM 2.5 levels and in turn may help lessen transmission risk of SARS-CoV-2 aerosols and airborne viruses

Wiltgen, Elizabeth

Institution: *WI - Marquette University*

Discipline: Nursing/Health Science

Author/Contributors:
Elizabeth Wiltgen,
Kristin Haglund

Abstract Name: **Undergraduate Student Identified Solutions to Advance Sexual Health**

Cultivation and adoption of knowledge, attitudes and behaviors that promote sexual health across the lifespan is a normative task of emerging adulthood. Policies of educational institutions can support, or impede, sexual health of students. Universities have a responsibility to provide education and programming to promote sexual health for their students (Carrasco, 2021). The goal of this community-based assessment was to identify prioritized, actionable ideas to improve sexual health among undergraduate students at Marquette University (MU).Group concept mapping provided a structured process to generate and implement ideas to solve a community problem. To begin the process, an online survey was distributed with three questions for idea generation: “In order to prevent sexual assault and other unwanted sexual contact on MU’s campus, we need _____”. “In order for undergraduate students at MU to have healthier relationships with intimate partners, we need _____”, and “In order to help undergraduate students at MU to be sexually healthier, we need _____”. The survey yielded about 40 unique ideas for each question. These ideas were rated in terms of importance, then sorted into domains by undergraduate students.Approximately 275 undergraduates participated. Mean age was 19.7 years, 83% were female, 15% male, and 2% non-binary. 74% identified as straight and 16% as LGBTQ. 34% had direct experience of sexual assault. Data analysis is underway using software to generate concept maps that depict ideas prioritized and sorted into domains. Examples of preliminary results include free STD testing at the student med clinic ranked as very important to promote sexual health, more campus spaces for open conversation about sex as very important for healthy relationships, and consent education as very important to prevent sexual violence. In spring 2023, final results will be presented to relevant audiences, and work groups formed to put the ideas into action

Wimmer, Tobias

Institution: *IL - University of Illinois Urbana-Champaign*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Tobias Wimmer,
Janine Nunes,
Niki Abbasi,
Zehao Pan,
Howard A. Stone

Abstract Name: Developing Internally Structured Microfibers

A new method was developed for creating internally structured and surface structured microfibers, using non-equilibrated aqueous poly-phase systems. To generate structured fluid jets aqueous two-phase and aqueous three-phase systems were used. The two-phase system involves flowing a jet of an aqueous poly(ethylene glycol) diacrylate (PEGDa)-rich phase containing a miscible amount of glycerol surrounded by a concentrated aqueous glycerol solution. For the three-phase system, the jet is PEGDa-rich, with a miscible amount of dipotassium phosphate salt, surrounded by a glycerol solution. For both systems, the concentrations of the species in the jet and the outer stream are chosen such that upon contact, water diffuses from the inner stream towards the outer stream, allowing for nucleation of salt/glycerol droplets within the PEGDa jet. A unique approach to pulling glass capillary tubes in-house, instead of utilizing a conventional micropipette puller, was used to create a coaxial glass capillary flow device to generate fluid jets. Microscopy is used to observe the nucleated droplets growing downstream and coalescing, creating various morphologies along the length of the device. The initial concentration of the species and flow rates were varied (due to different inner capillary diameters) to identify regimes where structured jets are formed before pinching off to form droplets. The PEGDa-rich jet with the addition of photoinitiator was UV-polymerized to create structured microfibers. This system has important implications for the generation of fiber-based hydrogels that could be used for drug delivery and tissue engineering applications due to their biocompatibility.

Wing, Claire

Institution: *OH - University of Findlay*

Discipline: English/Linguistics

Author/Contributors:
Claire Wing

Abstract Name: The Gilgo Beach Investigation: How Prejudice Delays Justice

In December 2010, investigators for missing person Shannan Gilbert searched the marshes of Gilgo Beach, only to find a body, but the body wasn't Shannan. This discovery led to the recovery of body parts from 10-16 women found to be escorts on Craigslist. Consequently, a new investigation was opened known as the Gilgo Beach murders, in a search to find the serial killer who killed these women. Recognizing the prejudice that the prostitutes in the Gilgo Beach investigation suffered in several aspects of the investigation is important. By referring to the Gilgo Beach killings, the following argument builds and expands on the previous literature that establishes the problem of prostitutes being more likely to be victims of serial murders, while the primary sources of news articles are utilized to examinethe investigation itself. With several points to establish, this paper argues clear facts supported by reputable primary sources to state that the police were biased in their actions on the case. These indicators can range from the publication dates of newspapers and police comments to the search of a police officer as a probable suspect. The paper includes literature from researchers and previous experiences describing prostitutes as serial murderer victimsas well as details from primary sources about the Gilgo Beach investigation. The paper concludes that there is enough evidence to debate the question of why the Gilgo Beach investigation hasn't been solved in over two decades.

Wink, Dean

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Ethan Hensel,
Samantha Krueger,
Dean Wink

Abstract Name: **A Culturally Informed Approach to Improving Forest Diversity in Bad River Tribal Lands**

Forest diversification is essential to creating and maintaining healthy, resilient forest ecosystems. Forest diversification buffers the effects of climate change, creates new habitats for plants and animals, and improves biodiversity increasing the speed of succession. Without forest diversification, plant and animal life are at higher risk of localized extinction. More species and populations of plants and animals thrive in an ecosystem that facilitates their habitat needs. In this project we worked with the Mashkiiziibii (Bad River) Natural Resources Department to diversify their forested lands. We acknowledge that the Mashkiiziibii tribal lands are of cultural significance and their cultural values play an important role within their community. For this project, we used LiDAR images and superimposed soil maps to locate sand lenses that have the potential to house new tree species and improve biodiversity. By collecting and analyzing samples from the study areas in the field, we were able to verify our observations from remotely sensed data.

Winklepleck, Forest

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Chemistry/Materials Science

Author/Contributors:
Forest Winklepleck,
Paul House

Abstract Name: **Analysis of Volatile Chemicals in Dog Urine using SPME?**

Urinary markings by domestic dogs have been seen to act as social indicators for other dogs. Although dogs urinating to mark territory is not a novel idea, the compounds responsible for this communication need to be studied. This project is a first step in analysis of the volatile organic compounds (VOC's) present in samples of dog urine to find chemicals important in communications by scent. Solid phase microextraction (SPME) with a polymer fiber is a growing method to detect VOC's. Extraction is done by heating and stirring the samples with the polymer fiber inserted into the headspace of the sample vial, and allowing the VOC's to adsorb on the fiber, which then is analyzed by gas chromatography. We use GC both with flame ionization detection (GC-FID) and mass spectrometer(GC-MS) for analysis. This project focuses on the effect of pH on extraction using buffer solutions. By altering the pH of our samples with a variety of buffer solutions (2, 7, 12 pH), the charge on acidic and basic compounds is changed, which significantly affects volatility

Winter, Brittney

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Grace Bowe,
Sydney Rae,
Brittney Winter

Abstract Name: **A Comparison of Alluvial Fills in Former Glacial Meltwater Stream Valleys in West-Central Wisconsin**

The Lower Chippewa River (LCR), a tributary to the Upper Mississippi River (UMR) in west-central Wisconsin, drained meltwater from the Chippewa Lobe of the Laurentide Ice Sheet and filled its valley with glacial outwash ca. 30 to 15,000 years ago. Then, as the region deglaciated, the UMR incised abruptly, initiating a wave of incision that progressed up the LCR in a prolonged and episodic manner (Faulkner et al. 2016). For this study, we examined the LCR's two largest tributaries, the Eau Claire River (ECR) and the Red Cedar River (RCR), as part of an ongoing project to determine how incision propagated through the entire LCR fluvial system and to identify what controlled the incision process. The specific objective of our research was to ascertain the sedimentological characteristics of the alluvial fills in each river valley in order to determine if the fills are similar (as expected, given that both were meltwater streams that drained the Chippewa Lobe) or different. We accomplished this objective by kayaking each river, mapping the location of terrace cutbanks, and describing the alluvium exposed in them. Contrary to what we expected, we found the fills in the two valleys to be clearly different. While both are characterized by tabular cross beds of medium-to-coarse sand with rare gravel, along with planar interbeds of gravelly sand, gravelly sand interbeds are generally more common—and gravel-size clasts typically larger—in the RCR valley. We are uncertain why the RCR fills are coarser. One hypothesis is that the RCR was the larger meltwater river and able to transport coarser material away from the ice margin. Whatever the explanation, the differences in valley-fill sedimentology may have influenced the process of incision as it propagated up each valley. Future research should take these differences into consideration.

Winter, Nicholas

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Biology

Author/Contributors:
Natalie Meyer,
Nicholas Winter,
Abby Lentz

Abstract Name: **Bumblebee Distribution on UW-Parkside's Campus**

Purpose Bumblebees are known pollinators and contributors to healthy ecosystems. In Wisconsin, UW-Parkside is a known location for the federally endangered Rusty-patched-bumblebee (Bombus affinis) and other bumblebee species. The objective of this project was to locate and identify various members of Bombus in four distinct campus phases (phase 1 and 2: completed restoration, phase 3: current restoration, phase 4: pre-restoration). Artificial nests were deployed into phases to encourage nesting and assess feasibility of monitoring resident bumblebee populations.Methods and Materials Weekly, one-hour, surveys were conducted under appropriate conditions from 11 May to 5 October, 2022. Sites of ~15m radius within each phase were surveyed for Bombus activity. Information regarding location, weather, and topography were recorded. During surveys, specimens were tallied and photographed for later identification. In each phase, six randomly placed artificial nests were either wood-covered or unsheltered to resemble natural nesting conditions. Early in the season nests were regularly inspected for activity. Results During 50 surveys, 199 bumblebees were recorded on the UW-Parkside campus; no Rusty patched bumblebees were observed during the first year of this project. Bumblebees appeared to prefer phases based on habitat composition rather than levels of restoration. In spring, it appeared queens frequented wooded areas, presumably for nesting purposes. Artificial nests were unoccupied this season perhaps due to delayed placement and challenges from vegetation encroachment. This pilot project provides guidelines for future artificial nesting placement and construction. Overall, our first season of survey data provides needed information on the current state of bumblebee activity on campus which serves as a guide for further restoration.

Winter, Taylor

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Physics/Astronomy

Author/Contributors:
Taylor Winter,
Conner Hedtke

Abstract Name: **End Correction in Cylindrical Pipes**

The goal of this project was to determine the end correction for circular tubes of varying lengths and diameters. Unlike a vibrating string, which has a node at each fixed end, a tube with open ends has a pressure node that extends beyond the physical end of the tube. This extra distance, which depends on the diameter, is the end correction. To determine this end correction, measurements of the tube's harmonics, length, diameter, and speed of sound were made. This presentation will display the frequencies (of the fundamental and first harmonic) and corresponding end corrections for tubes with varying lengths and diameters. Our results were compared to a well-known theoretical model. We found that the model underestimated the size of the end correction for low harmonics.

Wirkus, Tristan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Tristan Wirkus *Harry M Jol* *Michael Barrow,*
Delia Ihinger *Taylor Phillips* *Isabel Radtke,*
Joe Beck *Richard A Freund* *Caroline Hayes,*
Mikaela Martinez-Dettinger *Bri Jol* *Phillip Reeder*

Abstract Name: **Locating Jewish Holocaust Sites Near Alytus, Lithuania, Using Noninvasive Ground Penetrating Radar**

The Holocaust was the systematic killing of over six million European Jews andothers deemed undesirable by the Naziregime and their collaborators leading up to, and during World War II. Many of these killing sites remain hidden. Between 1941–1944, 60,000-70,000 Jewish people were killed and buried in mass graves in the Vidzgiris Forest near Alytus, Lithuania. The exact location of these mass graves is disputed amongst existing archival evidence and eyewitness testimonies. Ground penetrating radar (GPR) offers a means of detecting, and therefore locating, these burials. GPR is a non-invasive method that utilizes electromagnetic pulses to create subsurface profiles, allowing the user to image objects or sediment horizons underground. GPR was applied to a large trench-like physical feature, which measured 5m wide and exceeded 100m in length. The trench feature representsa potential burial site based on thephysical landscapeas well asdirect mentions of a trench in the literature, however, this feature currently contains no memorial.In an investigative effort, 48 parallel GPR lines were collected 0.25m apart perpendicular tothe trench using the Sensors and Software pulse EKKO Pro500 MHz antennae. A 0.02m step size was triggered by an odometer wheel to create a 12x12m grid of data. Local elevation data was recorded using the Topcon RL-H4C self-leveling laser and receiver every 1x1m. Parabolic subsurface features indicative to that of other burials wereidentified while using the EKKO_Project 5 GPR processing program. The feature represented by these parabolas extends the entire width of the grid, at 1.7m below the surface. Further investigations–such as electrical resistivity tomography (ERT) profiling and aerial photography–are suggested to determine the full scale of thesubsurface feature identified. Future study methods should remain noninvasive in nature, as it is considered disrespectful to excavate, exhume,or disturb the remains of Holocaust victims.

Wirth, Kate

Institution: *NC - Elon University*

Discipline: Social Work

Author/Contributors:
Kate Wirth

Abstract Name: **The Sex Talk: Conversations Between Fathers and Sons About Familial Upbringing and Impacts on Perceptions of Contraceptive Responsibility**

Sexual socialization is the process in which children and adolescents develop a knowledge and understanding of sexuality, sex, and safe sex practices. Parents play a crucial role in sex education and have been known to have conversations with their children about safe sex practices, consent, and sexuality. Family discussions, especially discussions between fathers and sons, allow adolescents to learn about the complexities of sex in a safe and honest environment. The significant gendered gap in sex education often encourages women to be responsible for learning about sex and using contraception, leaving men out of the discussion. Fathers today are in a unique position to start new conversations with their children; breaking the cycle of toxic masculinity and gendered divisions of labor in the home. Through surveys and interviews of college-aged sons and their fathers, this research aims to gain insight into the under-researched conversations between fathers and sons. In figuring out what young men and their fathers know and understand about sex, contraception, and gendered division of labor, we can determine how to better our sex education programs and pinpoint opportunities to support and educate men. This research asks three important questions: 1) How do perceived gendered divisions of labor impact feelings of responsibility for contraception among men? 2) When and how do conversations about sex and contraception happen between fathers and sons? 3) In what ways do these conversations impact masculinity, fatherhood, and men's influence on contraceptive management?

Wiseman, William

Institution: *KY - University of Kentucky*

Discipline: Education

Author/Contributors:
Parker Parrent,
William Wiseman

Abstract Name: **Factors that Influence College Students' Mathematical Identity and Perceived Proficiency**

The nature of mathematical knowledge is loosely defined by Kean (2017) as an individual's belief of how mathematical knowledge is organized and the source, justification, and content of this knowledge. Students' beliefs about the nature of mathematics can impact many aspects of their academic and overall life pursuits, and can be influenced by a myriad of experiences. In this study, we specifically examine the beliefs and experiences of college students enrolled in College Algebra courses, as we know the course is a gatekeeper that often predicts students' graduation (Bailey, et al., 2010). We use the figured worlds conceptual framework in the learning of mathematical experiences, to understand the multi-layered components of identity in varying contexts (Holland, et al., 1998). To examine undergraduate college students' past mathematics education experiences, beliefs about the nature of mathematics, and experiences in a College Algebra course, pre- and post-surveys were administered in spring 2022. We had 50 participants complete both the pre- and post-surveys. The Likert-items ranging from strongly agree to strongly disagree include scales intended to measure perceptions of mathematics proficiency and sense of belonging in mathematics. The open-ended questions aimed to understand participants' past mathematics experiences, experiences in College Algebra, and beliefs about the nature of mathematics. Preliminary results of open-ended responses indicated themes such as affective factors (e.g., stress, confusion), achievement (e.g., success or failure), acknowledgement (e.g., feeling seen, participation) and application (e.g., careers, daily life) of mathematics. Pre- to post-survey comparisons demonstrate gender differences with female participants showing a positive increase in their self-perceived proficiency in mathematics with pre-data starting lower than male participants and post-data higher than males. This change suggests that perceived gains in proficiency are related to female students experiencing a more positive mathematics college environment, which could influence their mathematics identity.

Wishart, Bryce

Institution: *GA - Kennesaw State University*

Discipline: Computer Science/Information Systems

Author/Contributors:
Bryce Wishart,
Abm. Adnan Azmee,
Md Abdullah Al Hafiz Khan

Abstract Name: **Identifying Mental Health Issues from Social Media using Machine Learning**

The way we think and feel psychologically, emotionally, and socially contributes to our overall mental health. We cannot help but let our thoughts, emotions, and behaviors be influenced by mental health. How we respond to pressure, interact with others, and make decisions are all influenced by it. Because of the changes in lifestyle brought about by technology, mental health issues are now more common than ever. The way someone interacts on social media platforms can reveal the presence of certain mental health issues. Detecting these issues early would allow us to aid the affected individual. It is challenging to pinpoint the reason behind all these issues because of the massive amounts of data available on social media and the inherent biases of humans. Deep neural networks excel at processing highly complex data and interpreting intricate aspects. In this project, we utilize the potential of deep learning to develop a Long short-term memory (LSTM) model, a special kind of recurrent neural network (RNN) model that helps us correctly identify the reason behind mental health issues from social media data. LSTM performs very well in Natural Language Processing (NLP) classification problems because it is more adept at interpreting temporal and sequential data than other types of neural networks. In this project, we are using publicly available social media datasets. We anticipate that by using our model, we would be able to correctly find the causes, allowing us to help and alleviate mental health-related sufferings more effectively.

Wisniewski, Jasmine

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Jasmine Wisniewski *Bailey Jackson* *Caleb Cheng*,
Yuanyaun Qiao *Costas Lyssiotis* *Arul Chinnaiyan*

Abstract Name: **ESK981 Increases The Effectiveness Of MEK Inhibitors For Therapeutic Treatment Of PDAC**

Pancreatic Ductal Adenocarcinoma (PDAC) is a highly deadly cancer, with a 5-year survival rate of only 11%. Nearly all cases of PDAC involve a mutation in KRAS, which leads to overactivation of the KRAS-RAF-MEK-ERK pathway, an important process in maintaining PDAC metabolic homeostasis. MEK inhibitors such as Trametinib target this KRAS pathway, but PDAC has recently been shown to protect itself from MEK inhibitors with autophagy–the recycling of cellular materials using the lysosome. Independently, PDAC has already been shown to be dependent upon autophagy for survival in its harsh microenvironments. Unfortunately, current autophagy inhibitors, like chloroquine, have been ineffective in clinical trials. In 2021, our lab reported ESK981, a phase I-cleared drug, as an autophagy inhibitor in prostate cancer models. This project aims to evaluate ESK981's ability to prevent PDAC cells from utilizing protective autophagy in response to MEK inhibitors. In our study, we performed western blot analyses, which showed an increase in both LC3 A/B and p62 for PDAC cells treated with ESK981, suggesting autophagy inhibition. To confirm this, we used the GFP-LC3-RFP-LC3ΔG system in Mia-paca2 cells and saw that the GFP/RFP ratio was maintained at 1:1. In contrast, Trametinib increased the levels of LC3 A/B but not p62, suggesting an increase in autophagy as expected. Furthermore, the GFP/RFP ratio in the GFP-LC3-RFP-LC3ΔG system decreased upon Trametinib treatment, confirming this. However, this decrease was reduced when cells were pretreated with ESK981 prior to Trametinib. This suggests that ESK981 was able to block autophagy driven by Trametinib. Finally, Cell-Titer Glo assays confirmed that Trametinib and ESK981 have synergistic effects (BLISS score >10) in suppressing the growth of PDAC cells. When taken together, our studies indicate that ESK981 can increase the effectiveness of Trametinib and suggest potential use of ESK981 as a therapeutic in PDAC treatment.

Witt, Robin

Institution: ***WI - University of Wisconsin-Whitewater***

Discipline: Biochemistry/Molecular Biology

Author/Contributors:
Robin Witt

Abstract Name: Structural Insights into Molecular Recognition by Human Chemokine CCL19

The human chemokines CCL19 and CCL21 bind to the G protein-coupled receptor (GPCR) CCR7 and play an important role in the trafficking of immune cells as well as cancer metastasis. Conserved binding sites for sulfotyrosine residues on the receptor contribute significantly to the chemokine/GPCR interaction and have been shown to provide promising targets for new drug-discovery efforts to disrupt the chemokine/GPCR interaction and, consequently, tumor metastasis. Here, we report the first X-ray crystal structure of a truncated CCL19 (residues 7–70) at 2.50 Å resolution, revealing molecular details crucial for protein–protein interactions. Although the overall structure is similar to the previously determined NMR model, there are important variations, particularly near the N terminus and the so-called 30's and 40's loops. Computational analysis using the FTMap server indicates the potential importance of these areas in ligand binding and the differences in binding hotspots compared to CCL21. NMR titration experiments using a CCR7-derived peptide (residues 5–11, TDDYIGD) further demonstrate potential receptor recognition sites, such as those near the C terminus and 40's loop, which consist of both positively charged and hydrophobic residues that may be important for receptor binding. Taken together, the X-ray, NMR, and computational analysis herein provide insights into the overall structure and molecular features of CCL19 and enables investigation into this chemokine's function and inhibitor development.

Witthun, Kora

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Psychology/Neuroscience

Author/Contributors:
Wesley Johnson *Ryan Dobson* *Kora Witthun*
Parker Lay

Abstract Name: Race Predicts Reactions to Controversial Information About Racism in Policing

Humans are not impartial receivers of information. Several cognitive biases are known to influence individuals' evaluations of new information. For example, individuals' assessments may be influenced by the identity or lived experience of the person presenting such information (i.e., a messenger), as well as the individual's own identity or lived experience. We investigated the degree to which people's reactions to scientific information about a controversial issue, racism in policing, are influenced by three factors: 1) participants' own racial identity (black or white), 2) the messenger's racial identity (black or white), and 3) the news platform on which the messenger presents their information (MSNBC or Fox News). In this study, participants were asked to read a handout containing a set of bulleted statistics that run counter to prominent narratives about the ubiquity of racist policing. For example, the handout included a breakdown of the number of unarmed white (26) and unarmed black (12) people that were shot and killed by the police in 2019, and it described data showing that many people drastically overestimate the number of unarmed black people that are shot and killed by police. Participants were led to believe through random assignment that the information came from either a black or white police chief who appeared on either Fox News or MSNBC, for a total of four experimental conditions. We hypothesized that participant racial identity, messenger racial identity, and news platform would independently predict participants' reactions to the information and also interact to affect participants' receptivity to the information. Contrary to expectation, the manipulations (messenger race and news platform) did not influence participants' reactions to the handout; however, one robust pattern in the data was that white participants viewed the message more favorably and were less inclined to censor it than were black participants.

Witzel, Jordan

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Communication/Journalism

Author/Contributors:
Connor Garland,
Dylan Baumbach,
Jack Grevious,
Emma Macken,
Jordan Witzel

Abstract Name: The effects of Time Poverty on Stress and Life Satisfaction in university students and workforce participants

In an increasingly connected world, where work and school are just a click away, work-life has integrated more and more into personal-life taking more of one's personal time. Advancements in telecommunication, telecommuting to work, has contributed to an 'always on' culture that values productivity and always being available. In light of this, there is limited research on perceived time poverty. This study examines perceived time poverty in conjunction with environmental demands and their effects on stress and life satisfaction in the context of university students and workforce participants. A survey using scales on time poverty, irritation, and environmental demands were used in a quantitative analysis to measure their effects on stress and life satisfaction.

Wolf, Olivia

Institution: ***WI - Carthage College***

Discipline: Psychology/Neuroscience

Author/Contributors:
Cameryn Eickstead, *Olivia Wolf*, *Giana Apostoli*,
Jack DeSalvo, *Alexandra Rynders*, *Daniel Miller*,
Sarah Terrill

Abstract Name: Effect of Central Ghrelin Receptor Signaling on Avoidance Behavior in Wistar-Kyoto and Sprague-Dawley Rats

Behavioral inhibition (BI) is believed to be a genetically determined trait which causes individuals to respond to stressful situations differently than their non-behaviorally inhibited (NBI) counterparts. This research has been extended to the rodent population wherein the Wistar-Kyoto (WKY) rat models BI anxiety-like behavior, and the Sprague-Dawley (SD) strain serves as a control. We have previously demonstrated that a single overnight fast can enhance avoidance responses in SD rats to the level of avoidance exhibited by WKY rats. Overnight fasting elicits a variety of physiological changes that might directly or indirectly contribute to avoidance and anxiety-like behaviors, including reduced levels of gastric distention, reduced circulating levels of glucose and leptin, and increased circulating levels of ghrelin and corticosterone. Here we sought to investigate potential mechanisms that contribute to the fasting-induced increase in avoidance behavior we observed in SD rats. Since fasting increases circulating levels of the hunger hormone ghrelin, we hypothesized that central ghrelin signaling may contribute to the observed behavioral effect of fasting. We tested this by examining the effect of central ghrelin receptor activation on our signaled lever press avoidance task in female WKY (n = 8) and SD (n = 8) rats. All rats were implanted with cannulas targeting the lateral ventricle (LV) and receivedintra-LV injections of ghrelin or saline 45 minutes prior to the signaled lever press avoidance session. Ghrelin did not affect avoidance in SD rats. Surprisingly, intra-LV ghrelin significantly reduced avoidance performance in WKY rats, which resulted in a significant increase in the number of shocks that WKY rats received following intra-LV ghrelin relative to saline treatment. These findings suggest that central ghrelin may have an anxiolytic-like effect in WKY rats. Additional studies are necessary to further elucidate mechanisms by which central ghrelin signaling affects mood-related behavior in both NBI and BI models.

Wolff, Anna

Institution: *MN - St. Catherine University*

Discipline: **Visual Arts/Performance Art**

Author/Contributors:
Anna Wolff,
Maryah Hijazi

Abstract Name: **The Evolution of Prominent Female Figures in Fashion of the 1900s**

Fashion is evolving and ever-changing. While fashion includes everyone, it is a practice that predominantly highlights and affects women. Despite this, there is a gap in literature on the representation of women who have influenced fashion. Our research aims to trace the development of styles, forms of dress, and appearance in relation to changing social, cultural, economic, technological, environmental, and political factors in the Western world while highlighting prominent female figures who helped make these changes in the 20th century.To explore this topic further, we first conducted a content analysis using scholarly publications and books to identify prominent female figures of the 20th century. We researched the historical climate of each of these decades, then selected female figures who represented these decades and their respectful fashions. After analyzing each decade, we focused on four decades, the 1920s, 1940s, 1960s, and the 1980s. The women identified include Greta Garbo, Marlene Dietrich, Jacqueline Kennedy, Twiggy, and Madonna. Greta Garbo and Marlene Dietrich were actresses of the 1920s and 1940s who influenced women to move away from cultural norms of dress; Twiggy and Jacqueline Kennedy. were prominent figures of the 1960s who showcased the polarized climate of the time, and Madonna was a singer who was known for her rebellious image in the 1980's. We then conducted an artifact analysis of styles and silhouettes of clothing from the 20th century using the historic dress collection at St. Catherine University in St. Paul, Minnesota. This collection contains over 2,000 garments and accessories dating back to the 1850, which provides evidence of silhouettes of the past. The findings of this research fill a gap in the literature and highlight women's accomplishments and fashion influence throughout the decades. These Findings will be presented in a visual window exhibition at Saint Catherine University.

Wolfgram, Emily

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Business**

Author/Contributors:
Emily Wolfgram,
Kaia Johnson

Abstract Name: **Body Positivity as Promotional Strategy**

The third wave of the body-positive movement began about a decade ago. Its primary purpose: confront the unrealistic expectations toward and unrepresentative bodies of women in popular media and advertising. This has led to the rebranding of many notable multinational companies, including expanding their size offerings. In the United States, consumer preference trends have led to an uptick in purchasing athleisure and sportswear apparel, and many companies in these industries have been forced to reevaluate their own product strategies in order to avoid being perceived as a non-inclusive brand. The purpose of this research, generally, is to investigate the potential effect of the body-positive movement on a particular part of the integrated marketing communications strategies of a sample of brands in the United States. We created a framework that delineates brands in our sample as being or not being proactively body-positive, and using this framework, we conducted case-based analyses to explore any potential correlations between being body-positive and gaining earned publicity.

Wong, Robert

Institution: *CA - University of the Pacific*

Discipline: Biology

Author/Contributors:
Marcos Gridi-Papp,
Robert Wong,
Mary Paduano,
Mark Morozumi,
Trisha Vo,
Justine Tang,
Betty Lee

Abstract Name: **Ontogeny of the t?ngara frog eardrum tuning**

The túngara frogs of Central America and parts of South America rely on their auditory capabilities to engage in reproductive processes. The female tungara frog evaluates many calls produced by multiple males and selects to mate with the male that produces the most attractive calls. Frogs in general show a match between the tuning of the ears and that of the calls promoting effective communication. While most of the energy in the call of the tungara frog is found at 700-1000 Hz, researchers in our lab have found that the frog's eardrums are tuned around 2-3 kHz. This range of auditory tuning was not only unexpected but the results also showed peculiar variability. We replicated the sensitivity measurements of the eardrums in a new set of frogs, exploring age as a potential source of variation. Each individual was anesthetized and presented with a series of pure tones ranging from 0.2 to 18 kHz while the vibrational responses of the eardrum were characterized using Doppler laser vibrometry. This study allowed us to verify the validity of our existing measurements and test the age of the frog as a variable for the cause of the mismatch between the tuning of the ears and the calls of this species.

Wood, Carol

Institution: *MN - Hamline University*

Discipline: Economics

Author/Contributors:
Carol Wood,
Samantha Snyder Çakir

Abstract Name: **Following Female Adolescent Activities Participation to Career Success**

Models of human capital development generally designate childhood and adolescence as periods of investment through decisions related to education and other forms of training. Returns on these investments are realized in the form of higher incomes in adulthood. Expanding on this understanding, economists consider how participation in extracurricular activities contributes to future earnings and labor market outcomes. Prior research analyzes the relationship between various activities and transition into young adulthood, showing the relationship to be more substantial among males than females and not utilizing the most recent data on relevant variables. The National Longitudinal Study of Adolescent and Adult Health (Add Health) first collected data from a nationally representative sample of 7th-12th grade students throughout the United States in 1994-1995, and followed up with the participants in four additional surveys, the most recent collection in 2016-2019. This project utilizes Add Health data to examine patterns in the adult labor market outcomes of individuals who participated or did not participate in extracurricular activities as teens. We hypothesize that those who participated in extracurriculars during adolescence tend to have greater economic outcomes as adults. When we examine the differences between participants and nonparticipants within separate childhood socioeconomic status (SES) groups, we see more statistically significant gains in mean income for participants than non-participants among females more than males. For women ages 36 through 39 who reported growing up in a household with lower SES than their peers, the difference in mean income between activity participants and non-participants was very large, with participants reporting incomes almost double those of non-participants. While this research is still in its preliminary phases, this sizable difference inspires further investigation.

Wood, Katherine

Institution: ***AR - John Brown University***

Discipline: Art/Music History

Author/Contributors:
Katherine Wood

Abstract Name: How are women presented as classical deities throughout art history?

This essay focuses on three main examples to explore the art historical use of classical deities to represent real women. The three examples are: the funeral stele of Aelea Procula, an ancient roman funeary altar depicting a young girl with features resembling the goddess Diana; Dante Gabriel Rossetti's Mnemosene,which shows his mistress Jane Burden depicted as the goddess of memory - as well as an accompanying poem; and Maud Sulter's self portrait Calliope, a photograph in which she uses the visual imagery of a promenent Greek Muse and a similar personal aesthetic to Jeanne Duval, another woman who acted as a muse and mistress to Charles Baudelaire. The object of the essay is to approach each art piece from a feminist and social art historical methodology in order to discover the implications of depicting women as deities. The essay includes exploration of visual references, cultural implications and as much of the personal lives of the women depicted as is available. The examples represent a wide variety of time periods and cultures, so the reasoning behind the depiction of women as deities varied between each one. Aelia Procula was depicted as Diana as a tribute to her youth when she passed, and was a common practice in Ancient Rome. Dante Gabriel Rossetti was working at a time when the resurgence of Helenistic art and architecture, thus his work with Jane Burden reflects this themewhile including subtle references to his personal relationship with his model. Maud Sulter's is the only piece both created by a woman, and as a self portrait. In this way, her piece stands out among the others, offering a unique point of view from both a feminist and social perspective.

Wood, Madeline

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

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Michael Ziegler

Abstract Name: Smartphone Use on Well Being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphone use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitive, and social well-being of individuals across the generations. Previous research tendedto focus on one aspect or another of well-being, for example sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are impacted by Smartphone use.

Woodbine, Matthew

Institution: ***GA - Kennesaw State University***

Discipline: Engineering/Applied Sciences

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Ayse Tekes

Abstract Name: Modeling and Simulation of Compliant Mechanisms in MATLAB Simscape

Compliant mechanisms are the mechanisms that transfer the input force, displacement, or torque from one point to another through the deformation of its compliant members and flexible body rather than the joints such as ball bearings. They have superiorities over the traditionally designed mechanisms such that since they can be designed and manufactured as a single piece using injection molding or additive manufacturing, they are light weighted, and no need for assembly and have no friction loss. Thus, the compliant mechanisms have better performance and accuracy and find application areas in the design of locomotive robots, grippers, medical robots, and microelectromechanical (MEMs) devices. Despite all the advantages, deriving the mathematical model of compliant mechanisms is much more challenging compared to traditional rigid body mechanisms as the complexity of the design increases. Although there are several methods available to find the load-deflection curves of flexible members such as pseudo rigid body modeling (PRBM) and the first and second of the Elliptica theory, they are limited to the simple geometries including fixed-free, fixed-guided, and fixed-fixed buckling beams. In this study, we present the design, modeling, and simulation of several compliant mechanisms in MATLAB Simscape. We adopted two approaches: the model can be created using the Simulink library blocks or by importing the cad model and then introducing the flexibility using discrete beam elements. We created the models of a fully compliant five-bar mechanism including 4 rigid bars connected by large deflecting flexure hinges, a compliant dwell mechanism incorporating buckling beams, a slider, and a rail, and a compliant bistable mechanism consisting of 6 rigid bars, a slider, and fixed-free flexible beams. The Simscape models not only provide kinematic insight but also visualizes the displacement and motion of each mechanism in the mechanics explorer.

Woodbury, Rebekah

Institution: ***UT - Utah State University***

Discipline: Biology

Author/Contributors:
Rebekah Woodbury

Abstract Name: Detecting Onion Pathogenic Gut Bacteria in Utah Thrips

The number of onions consumed per person has risen drastically over the last twenty years, from 12 pounds to 20 pounds. This 70% increase places onions as the fourth most consumed vegetable in the United States. As such, increased pressure is put on farmers and growers to meet this growing demand, and their ability to identify and manage bacterial diseases which cause onion bulb rots is vital. However each year, the onion industry loses over $60 million dollars as a result of damage and rot. Thrips are insects that damage economical crops, but are particularly harmful to onions and other vegetables. Thrips thrive in the warm and dry environment of Utah and can cause significant damage to entire fields. Thrips puncture plant tissue during feeding creating wounds. They also defecate on leaves and bacteria from their feces can enter these wounds. Gut bacteria from thrips have been shown to cause bacterial bulb rots in onions in some states. The objectives of this project are to identify gut bacteria from thrips collected in Utah onion fields and determine pathogenicity of bacterial isolates. Thrips were collected from five Utah onion fields during the onion growing season (June-September). Individual thrips were crushed in sterile water and the water was plated on nutrient agar. Resulting bacterial colonies were cultured and identified using PCR and 16S region primers. Bacterial genera identified from thrips to date have been found in rotten bulbs, indicating that Utah thrips could contribute to storage rot of onions.

Woodruff, Monica

Institution: *FL - University of West Florida*

Discipline: **Earth & Environmental Sciences**

Author/Contributors:
Monica Woodruff,
Johan Liebens

Abstract Name: **Microplastics in Soil: Identifying Their Prevalence in Northwest Florida and Their Effects on the Growth of Kale**

Current estimates suggest that land used for agriculture and horticulture has up to 13,000 microplastics per kilogram of soil, which is almost double the amount of microplastics found per kilogram of ocean water. Given that microplastics in soil can have a negative effect on the growth of some crops, the purpose of this research was to test for effects that different levels of microplastics in soil might have on kale, and to analyze agricultural sites in Northwest Florida region and test them for microplastics. Kale was planted from seed at a greenhouse in four groups of five replicates with different low-density polyethylene (LDPE) microplastic amounts, including 0g, 0.045g, 7.5g, and 15g. After cultivation, average stem diameter, number of leaves, root biomass, shoot biomass, and chlorophyll content of the kale were measured. Soil samples were collected from a farm in Walnut Hill, a community gardenin Pensacola, and the University of West Florida Community Garden. Microplastics were extracted from these soils using density separation with NaI, organic matter was removed with 30% H_2O_2, and the microplastics were classified by shape and color, and quantified by their abundance. The results showed that there was little significant effect of LDPEmicroplasticson kale growth except for root and shoot biomass which decreased with higher amounts of LDPE and root length which increased with higher amounts of LDPE. All of the soils collected from Northwest Florida had microplastics in them, though less than the global average. This study reveals microplastic trends in Northwest Florida and adds to the small collective of knowledge on how microplastics affect plant growth.

Woodruff, Noah

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Physics/Astronomy**

Author/Contributors:
Noah Woodruff,
Lyle Ford

Abstract Name: **The Stability of Planets in an S-Type Binary Star System**

Observations of extrasolar planets suggest that not only are planetary systems common, but they can also be found in binary star systems. The dynamics of planetary systems in which there are two stars are inherently more complicated than single star systems. In this study, we are interested in the stability of S-type planetary systems when orbital parameters are differed. If a planet can be determined to be in a stable orbit, then other questions such as whether the planet can support life can be addressed. An S-Type binary star system is defined by a planetary body orbiting a star, with a secondary external star orbiting outside of the initial star-planet system. We used REBOUND, an open-source N-body code, to investigate the marginal stability boundaries of S-Type systems. The marginal boundary is the distance in astronomical units (AU) between the central star and the secondary star -- with an initial condition of the planet orbiting at a semimajor axis of 1 AU around the initial star – such that a distance of 0.1 AU or less of the value would be considered unstable. Orbital parameters were varied, including the secondary star's orbital inclination, semimajor axis of the secondary star, and the eccentricity of the secondary star.

Woods, Megan

Institution: *NE - University of Nebraska at Omaha*

Discipline: Kinesiology/Physical & Occupational Therapy

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Jason Johanning *Sara Myers*

Abstract Name: **Gait Variability is Altered After Revascularization in Patients with Peripheral Artery Disease**

Revascularization surgical procedures to restore blood flow to the legs are common treatment options for patients with peripheral artery disease (PAD) if conservative approaches are not effective. Biomechanical analysis has demonstrated altered gait variability in patients with PAD. Gait variability is an indicator of the fluctuations in motor performance that occur across multiple repetitions of a specific task. The objective of this study was to determine whether linear and nonlinear measures of gait variability improve following revascularization treatment. Patients underwent revascularization surgery and participated in experimental testing before and six months after treatment. The position of reflective markers placed on specific anatomical locations of lower limbs was recorded while patients walked on a treadmill at a self-selected speed for three minutes or until the onset of pain. Linear analysis included the calculation of standard deviation (magnitude of variability). Nonlinear analysis measures the structure of variability (i.e., the largest Lyapunov exponent and the sample entropy) which was calculated from the time series of the sagittal lower limb joint angles. We calculated all outcome variables using custom codes in MATLAB for baseline and post-surgery conditions. Sample entropy values decreased after revascularization surgery indicating joint angles become more regular following treatment. The largest Lyapunov exponent values for the ankle joint showed greater changes pre- to post-surgery compared to the hip or knee joint and the Lyapunov exponent increased after surgery. There was a significant increase from pre- to post-surgery in the range of motion mean for the knee joint. Linear and nonlinear outcomes from patients after surgery indicate a benefit from surgery as these values move closer to the values seen in healthy controls. This knowledge will be useful for clinicians in interpreting the clinical significance of functional improvements following revascularization surgery.

Woolls, Mackenzie

Institution: *VA - Virginia Tech*

Discipline: Biology

Author/Contributors:
Mackenzie Woolls

Abstract Name: **NLRX1 Modulation of Sars-CoV-2 Immune Response**

Since the beginning of the Covid-19 pandemic, there have been 6.6 million deaths attributed to the disease. Severe progression of Covid-19 is attributed to the cytokine storm initiated by the immune response to the virus. NLRX1 is a NOD-like pattern recognition receptor, active in innate immune pathways. NLRX1 is part of the NF-B pathway, which regulates cytokines such as IL-6 and TNF-. We hypothesize that when NLRX1 is present, it will help moderate the immune response to Covid-19 and decrease damage done to the body. When NLRX1 is knocked out, we believe we will see a more extensive immune response and therefore more damage. Post challenge with Sars-CoV-2 virus (MOI of 1), in primary mouse bone marrow derived macrophages, have shown that lack of NLRX1 significantly increases IL-6 levels. IL-6 is a pro-inflammatory cytokine. Macrophages challenged internally with nucleocapsid proteins of Sars-CoV-2 had an increase of IL-6 in Nlrx1-/- macrophages. However when challenged with nucleocapsid proteins externally, wildtype macrophages had significant levels of IL-6. Previous studies have found that increased IL-6 levels are present in patients experiencing severe Covid. Histology slides have shown a significant difference in inflammation of the lungs when infected, with Nlrx1-/- mice experiencing more inflammation. Immunohistochemistry shows a larger amount of viral cells in knockout mice compared to wildtype mice. There are very limited therapeutic options for Covid-19. The suggestive data on NLRX1 warrants further research into the potential therapeutic drug target.

Wooters, Haleigh

Institution: *NC - University of North Carolina at Pembroke*

Discipline: Biology

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Haleigh Wooters *Hsin-Yu Chen* *Daniel Michele*

Abstract Name: **SNARE Vesicles in Membrane Repair in hiPSC Cardiomyocytes**

Duchenne muscular dystrophy is a genetic neuromuscular disorder resulting from mutations in the DMD gene which codes for dystrophin, a vital protein in the dystrophin-glycoprotein complex functioning as a membrane stabilizer during muscle contractions. Dysfunctional dystrophin in the sarcolemma results in loss of membrane integrity, rendering the plasma membrane prone to contraction-induced injuries which occur at a rate beyond that of membrane repair. The ability to facilitate membrane repair is necessary for cells to survive membrane disruptions, and better understanding of membrane repair mechanisms could provide future treatment for DMD patients. Once an injury has occurred, Ca2+triggered exocytosis is mediated by intracellular vesicles translocating to the plasma membrane injury site to facilitate membrane repair. However, the exact mechanism in which membrane repair occurs once these intracellular vesicles have translocated to the plasma membrane is not known. Previous research has suggested SNAREs function as possible mediators of membrane repair. In this study, we aimed to validate and establish expression of eGFP-labeled SNARE components in cardiomyocytes to study their compartment localization and role in membrane repair using immunofluorescence in paraformaldehyde-fixed cells. Human-induced pluripotent stem cells-derived cardiomyocytes (hiPS-CMs) were purified, lipo-transfected with eGFP-VAMP2, and mechanically stretched with the presence of propidium iodide to identify injury. Immunofluorescence revealed eGFP-VAMP2 appeared to be more evenly distributed throughout hiPS-CMs compared to non-CMs. Immunofluorescence also revealed that eGFP-VAMP2 in hiPS-CMs did not colocalize with LAMP1, but partially colocalized with GM130, suggesting VAMP2 resides in the Golgi but not lysosomes. After mechanical stretch-induced injury, immunofluorescence determined greater colocalization of eGFP-VAMP2 and Syntaxin 4 (Syn4), suggesting more SNARE colocalization after injury. Our results suggest eGFP-VAMP2 may form a SNARE complex with Syn4 to mediate membrane repair in injured hiPS-CMs. Further work will investigate the incorporation of eGFP-VAMP2 vesicles in the sarcolemma following laser-induced injury.

Worzalla, Megan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Biochemistry/Molecular Biology

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Jamie Lyman Gingerich

Abstract Name: **Analysis of 2 variants of CERKL, a gene associated with ocular disease**

Genetic testing, including whole genome and exome sequencing, is quickly becoming a standard healthcare practice, especially for patients with rare diseases. While some changes to DNA sequences can be benign, there are several variants that have not been characterized. One large group of these variants are classified as variants of uncertain significance (VUS), as the effects have not been directly studied yet. However, effectively interpreting the relationship between identified variants and disease remains challenging. VUS can include variants that are predicted in silico analyses to affect splicing of the pre-mRNA into mature mRNA. Disruption of splicing can result in loss of a functional gene product due to exon skipping, changes in the reading frame, or introduction of a premature stop codon. In collaboration with PreventionGenetics, our lab analyzes VUS predicted to affect splicing of genes using a minigene system. Briefly, the minigene system involves cloning a single gene segment into a plasmid vector which is transfected into eukaryotic cells. Processed mRNA transcripts are then sequenced to determine the effects of the variant on splicing. We will present our analysis of 2 variants in the CERKL gene and their potential clinical relevance.

Wu, Rebecca

Institution: *IL - Northwestern University*

Discipline: Anthropology/Archeology/Human Geography

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Sahana Kuthyar *Delia Carba*

Abstract Name: **Maternal Stress Associated With Infant Gut Microbiota and Infant Health in Cebu, Philippines**

Infant early-life health outcomes are impacted by maternal health in the pre- and postnatal periods. Stress related to socioeconomic factors can contribute to variable maternal health. Both maternal and infant health are tied to the composition of the gut microbiota, a collection of microorganisms in the human gastrointestinal tract that has been shown to modulate stress through functioning of the hypothalamus-pituitary adrenal axis. Previous research has linked maternal stress to the infant gut microbiota and infant cognitive developmental issues, which often coexist with physical health problems, but associations between maternal stress, the infant microbiota, and infant physical health have not been explored directly. Using data from the Cebu Longitudinal Health and Nutrition Survey (CLHNS), we investigated connections between levels of maternal stress, composition of the infant gut microbiota, and infant health outcomes. Maternal stress was measured in 42 mothers using a validated stress survey composed of 16 variables, and infant gut microbiota composition was determined at 2 weeks and 6 months of age using 16s rRNA gene sequencing. Preliminary PERMANOVA results showed that differing infant microbial compositions were associated with quantified levels of stress, including variables of feeling irritated (p=0.04) and feeling upset (p=0.04). We predict that these differing infant microbial compositions will also be related to early-life infant health outcomes as measured in the CLHNS and will be supported by associations with maternal C-reactive protein (CRP) levels. These results demonstrate that varying maternal stress levels can impact infant early-life health outcomes and provide a potential mechanism for intergenerational transmission of stress.

Wurzer, Kyler

Institution: *WI - Chippewa Valley Technical College*

Discipline: Psychology/Neuroscience

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Kyler Wurzer,
Logan Schultz,
Noah Speight,
Bryce Knutson

Abstract Name: **Effects of Social Media**

Social media has become one of the biggest aspects of our everyday lives. They allow us to share our lives with loved ones, research our interests, and expose ourselves to all kinds of new things. Due to how ubiquitous the sites are, they inevitably will have a profound effect on mental health. Existing literature shows that there are many ways that social media can affect people's lives. It shows that social media can affect people's health choices and personal lifestyle decisions. Research also shows that people tend to compare themselves to others more when using social media often, which can lead to a multitude of mental health and self-perception issues. This research focuses on mental health and social media use. Using a survey implemented to a diverse sample of individuals through various social media outlets, a wide variety of different trends emerged. The main focus of the research was to determine whether social media was linked to self-esteem. The research shows a wide variety of ways social media is affecting people's mental health and their assessments of their own physical and intellectual attributes.

Wylie, Kyla

Institution: ***WI - Chippewa Valley Technical College***

Discipline: Psychology/Neuroscience

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Justin Swanson,
Kayla Wylie

Abstract Name: Role of Motivation on Academic Success B

The collegiate world is constantly discussing how student motivation is related to student success. How true is this correlation? Does the motivation importance change with the specific course or the format the course is taught in? Can the institution or instructor impact the student motivation level by understanding intrinsic and extrinsic factors that motivate students? The aim of this study is to determine what motivation is and how it impacts the academic success of college students. Factors that will be studied are intrinsic and extrinsic motivation factors, academic performance, familial college experience (1st generation studens vs non 1st generation students), and the role of the institution and faculty. The study will be completed through a survey with a battery of questions addressing all the key areas mentioned above. Demographics will also be collected to compare possible inter-group differences. Correlational analysis will be completed through data collection in the spring semester of 2023.

Xia, Weiling

Institution: ***WI - University of Wisconsin-Milwaukee***

Discipline: Chemistry/Materials Science

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Yin Wang,
Xiaoli Ma

Abstract Name: Covalent Organic Framework Membrane for the Removal of Per- and Polyfluoroalkyl Substances

Per- and polyfluoroalkyl substances (PFAS), as a group of emerging contaminants, have been ubiquitously detected in surface water, groundwater, and wastewater. Membrane-based filtration is considered an economic and effective approach to remove PFAS from contaminated water. Covalent organic framework (COF) membranes are a promising water treatment technology due to their inherent porosity and outstanding chemical stability, but remain unexplored yet for PFAS removal. In this work, a series of β-ketoenamine-linked COF membranes were prepared by interfacial polymerization method, and membrane structures were characterized by a variety of material characterization techniques. PFAS rejection rates, as well as water permeance of the synthesized COF membranes, were evaluated in a crossflow permeation system. Findings from this research will provide insight into the correlations between COF membrane structure and PFAS rejection property that will guide better design of membrane materials for the removal of emerging contaminants.

Xiong, Jingyi

Institution: ***PA - University of Pittsburgh School of Nursing***

Discipline: Nursing/Health Science

Author/Contributors:
Jingyi Xiong *Katrina Carr* *Susan Wesmiller*

Abstract Name: Association of SNPS of the COMT Gene and Pain Experienced by Women Following Surgery for Breast Cancer

Introduction: The COMT gene is responsible for producing an enzyme called catechol-O-Methytransferace. This enzyme metabolizes various catecholamines, such as dopamine and epinephrine. This study aimed to explore the association of common single nucleotide polymorphisms (SNPs) found in the COMT gene with pain experienced by women 48 hours following surgery for breast cancer. Methods: We employed a secondary data analysis of symptom data collected as a part of a larger, longitudinal study focused on the genetic underpinnings of symptoms experienced by women treated for breast cancer. IRB approval and informed consent were obtained prior to data collection. For this project, a cross-sectional design was used to explore the association of pain assessed 48 hours postoperatively with genotypes of the identified SNPs. Pain was assessed using an 11-point verbal pain score. Genotype data were collected from DNA extracted from saliva samples obtained from all study participants.Results:The sample consisted of 296 women (85% White), aged 28-88 years (mean 60.88 years), who were scheduled for surgery for breast cancer. We investigate 5 SNPs (rs 4646312, rs165656, rs6269, rs4648, rs165599) along the COMT gene, which have known associations with the modulation of pain sensitivity and perioperative opioid use. Minor allele frequencywas at least 14% for all SNPs except for rs165599. Thus the heterozygous and homozygous variant genotypes were combined for analysis. When the AA genotype of rs 165599 was compared to the combined AG/GG group, there was a clinically significant trend for the AA group to have increased sensitivity (0.07). In addition, the AA genotype of the Val158/Met (rs 4680) was significant for higher levels of pain (0.06) compared to the AG and GG groups.Conclusion:This study demonstrates the increased potential of using genetic markers to predict patients at increased risk for experiencing pain following surgery for breast cancer.

Xu, Jialin

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Chemistry/Materials Science

Author/Contributors:
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Elizabeth Glogowski

Abstract Name: Viscosity and Viscoelastic Behavior of Stimuli-responsive Copolymers for Use as Dispersants in Architectural Coatings

Viscosity and viscoelastic properties are important for the application of stimuli-responsive polymers as dispersants in architectural coatings such as paints. Viscosity is a fluid's resistance to flow under stress, while viscoelastic materials exhibit solid-like elastic or liquid-like viscous behavior depending on experimental conditions. New stimuli-responsive polymers, which change their properties in response to changes in temperature, pH, and mechanical environments, could affect the dispersion of opacifying particles such as titanium dioxide in the coating. By adding stimuli-responsive polymers, the properties of architectural coatings can be controlled to produce a more opaque coating with controlled viscosity. This decreases costs and reduces environmental impact. A rheometer is used to test a polymer's viscoelastic properties under different pH, temperature, shear rate, and frequency conditions. Understanding how viscoelastic properties change in response to external conditions is necessary for matching these polymer properties to properties needed for architectural coatings. Viscosity testing is used to determine how well the polymer will mix with titanium dioxide particles. Ideally the coating will have the lowest polymer concentration and lowest viscosity possible to meet performance needs. Viscosity tests help determine where this minimum occurs for different copolymers. This can help determine which polymer is most suitable for dispersing titanium dioxide particles. Viscosity and viscoelastic testing can allow for determination of how changes in polymer structure result in changes in stimuli-responsive properties. The copolymer structures can be tuned, and the properties can be predicted in order to optimize properties for architectural coatings. This results in new materials to meet performance requirements to compete with traditional, commercially available dispersants.

Xu, Linlong

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Linlong Xu

Abstract Name: **Generating reliable amorphous structures: a comparative study**

Many technologically important materials have an amorphous structure where the arrangement of atoms or molecules is disordered. A fundamental understanding of the structures of amorphous materials is critical, and computer simulations have played an important role in revealing the structural characteristics of amorphous materials. Traditional, the simulated melt-quench method has been used to generate the amorphous structure, where the system is melted at high temperatures and then quickly quenched down. While this approach has been widely adopted, a major disadvantage is that the simulated melt-quench is computationally costly, especially if ab initio molecular dynamics (AIMD) simulations are used for the melt-quench process. Alternatively, one can use a Monte Carlo (MC) approach to generate typical amorphous configurations, although the accuracy of the structure thus generated cannot always be guaranteed. In this project, the two different approaches will be used to generate structures of amorphous silicon oxides (SiOx, x≤2) with varying oxygen concentrations. The resulting structures will be compared with available experimental data to identify the strength and weaknesses of each approach. The optimal computational protocol that produces reliable amorphous structures while maintaining computational efficiency will be proposed.

Xu, Yuan

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Engineering/Applied Sciences

Author/Contributors:
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Matthew C. Jewell

Abstract Name: **Analysis of Filament Homogeneity in composite Bi-2212 wires**

Superconductors are materials that can carry electricity without resistance at cryogenic temperatures,large magnet applications such as particle accelerators. Bi2Sr2CaCu2O8-x(Bi-2212) is a superconductor capable of producing very large magnetic fields over 20 Tesla, but processing the Bi-2212 into a usable, filamentary round wire form is challenging. In particular, fluctuations in the size and shape of Bi-2212 filaments in a composite wire can affect processing capability and wire performance. For this project, a set of twelve densified composite Bi-2212/Ag wires comprised from five different filament configurations, four final diameters, and utilizing three different powder sources were sectioned and imaged at 1 mm depth intervals to assess the longitudinal homogeneity of the filaments, to better understand the maturity of the production process for Bi-2212. Image analysis using ImageJ was then used to assess the evolution of the geometric characteristics of each filament in the cross-section, and to quantify those changes. For transverse analysis, we figured out that most wires exhibit some filament elongation at thecorners of each bundleand the distributions of filament areas and circularities for the trapezoidal filaments are clearly shifted relative to the other bundle shapes. For longitudinal analysis, for both area and circularity, larger and more circular filaments are more uniform along the length and the coefficients of variation for those parameters are relatively insensitive to the radial position of the filament in the wire. Filament size is the most important variable for longitudinal uniformity, and is considerably moreimportant than filament spacing, powder source, or overall wire architecture. This set of Bi-2212 wires represents a mature production with overall stable longitudinal filament uniformity, and this analysis will be helpful to Bi-2212 wire manufacturers as they seek to optimize wire layout and powder characteristics for fabricability and performance uniformity.

Yadav, Eshita

Institution: *AL - University of Alabama at Birmingham*

Discipline: Psychology/Neuroscience

Author/Contributors:
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Eshita Yadav,
Sonja Virkus,
Andrew Hardaway

Abstract Name: **Physiological linkages in eating disorders via variance in preproglucagon**

The brain plays a crucial role in feeding behaviors through the activation and inhibition of various neural circuits. Properly understanding these mechanisms allows us the ability to create therapies and treatments for diseases relating to feeding and motivation, including obesity related illnesses and various eating disorders. One particular hormone that regulates the mechanisms of feeding is Glucagon-like peptide 1 (GLP-1), a peptide hormone produced by the intestinal cells through the processing of proglucagon. It is known that GLP-1 acts by activating GLP-1 receptors on the pancreas and brain which increases the release of insulin while simultaneously decreasing the release of glucagon, causing a decrease in appetite. Despite its well known function in the pancreas, this phenomenon is still being explored in the brain and is the focus of our study. We performed an anatomical characterization of GCG cells (GLP-1 producing cells) in the nucleus of the solitary tract (NTS) looking at two different cohorts of mice. For one cohort, we used non-transgenic mice and performed fluorescence in situ hybridization for that cohort, and for the other, we crossbred GCGicre mice with L10EGFP mice. We imaged horizontally sliced sections as well as coronal sections of the NTS and then analyzed those cell counts using software that aids in interpreting cell images. Potential sex differences in the distribution of the GCG cells was unknown, therefore this led us to the analysis of the density distribution separated by sex. In our study, we observed no sex differences in the density distribution of GcgNTS cells; however, future studies using this data will be important in understanding the impact GcgNTS cells have on feeding and motivation and what roles they play in advancing current therapies of obesity related illness.

Yalla, Sairakshitha

Institution: *KY - University of Kentucky*

Discipline: Public Health

Author/Contributors:
Sairakshitha Yalla *Jessica Thompson* *Pamela Hull*

Abstract Name: **Understanding Lung Cancer Screening Resources and Needs in Appalachian Kentucky**

Appalachian Kentucky (KY), a largely rural and under-resourced region, has the highest rates of lung cancer incidence and mortality in the US. In recent years, lung cancer screening has become increasingly available; however, in Appalachian KY, only 14% of those meeting guideline requirements are being screened. The specific aims of this study are to identify lung cancer screening health education material needs in the Appalachian KY community and to uncover the social determinants of health affecting lung cancer screening for those in the region. We are recruiting 10 Appalachian KY residents who are eligible for lung cancer screening and not currently in a healthcare-based profession to participate in 60-minute qualitative interviews. In these interviews, we share three lung cancer screening materials that are currently available online and ask the participants for their opinions. We then ask participants about specific social determinants of health in their community and how we can help members to access screening. The interviews were transcribed, and two independent coders analyzed the data to determine relevant themes. The diverse insights provided in this study can help us create better suited and culturally current infographics for the target population. There are multiple social determinants at play for rural Appalachian KY residents, which we have uncovered during our research from how participants haven't heard of being eligible for lung cancer screening from their primary care physicians to difficulty getting transportation to the fear of knowing that they have lung cancer. Future research can be conducted to determine how to improve access and understand some of the identified lung cancer screening barriers. Overall, this study can help improve the disparate lung cancer incidence and mortality among individuals in this region through generating new, accessible health education materials on lung cancer screening.

Yamakawa, Sho

Institution: *JPN - Musashino University*

Discipline: Mathematics

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Sho Yamakawa,
Yuto Horikoshi,
Hinako Nishimura

Abstract Name: **The change of the stock market in the COVID-19 and examination of the most suitable portfolio**

Purpose. The basic idea is that when holding stock stocks or financial assets, one acquires financial assets that are likely to be profitable. However, at that time, there is a limit to one's budget and one cannot buy everything. The problem of selecting the optimal financial assets under various limitations such as budget is called the portfolio optimization problem. The influence on markets is immeasurable by the infection spread of COVID-19. Therefore we made two kinds of portfolios of stocks in 3 years (2018, 2020, 2022) and checked the effects of COVID-19.Method. We have compared the two kinds of portfolios. The first one is called "the mean variance model without short sale limitations (we call this model (1))" and the second one is called "the mean variance model with short sale limitations (we call this model (2))". We analyzed the changes in 3 years (2018, 2020, 2022). I have expressed risk and the condition of assets via a mathematical formula and generated a portfolio using the programming. We used data of the listed companies in Japan from "Astra Manager".Results. In the case (1), the loss risk is unaltered in 3 years, but the expected rate of return was found to rise year by year from 2018. On the other hand, in the case (2), the loss risk at 2020 is the biggest and the risk at 2022 is the smallest in 3 years. In addition, in the case (2), the expected rates of return at 2018, 2020 and 2022 were 0.8%, 0.5% and 1.0% respectively. From these results, we see that the market was under recovery compared to the situation during COVID-19 outbreak in 2020.

Yang, David

Institution: *PA - Swarthmore College*

Discipline: Mathematics

Author/Contributors:
Mengyuan Yang,
David Yang,
Philip Rehwinkel,
Ian Whitehead

Abstract Name: **Circle Packings from Tilings of the Plane**

Any circle configuration has a tangency graph, with a vertex for each circle and an edge for each tangency between circles. The well-known Apollonian circle packing can be constructed from a set of four base circles and a set of four dual circles, each of which has tetrahedral tangency graphs. The orbit of the base circles under the group generated by reflections through the dual circles is the packing, an infinite fractal set of circles.In general, one can start with a finite set of base circles whose tangency graph is the graph of any polyhedron and a finite set of dual circles whose tangency graph is the graph of the dual polyhedron. The orbit of the base circles under the group generated by the dual circles is known as a polyhedral packing, defined by Kontorovich and Nakamura. We study packings which originate from infinite configurations of base and dual circles, a further generalization. We introduce a new class of fractal circle packings in the plane and discuss its relation to crystallographic and Klenian circle packings. The existence and uniqueness of these packings are guaranteed by infinite versions of the Koebe-Andreev-Thurston theorem. The three main circle packings we study are the triangular, square, and hexagonal packings. We focus on their arithmetic properties--integrality, super-integrality, and quadratic and linear forms. We also give a broader class of examples (trapezohedron, cupola, and anticupola circle packings), with a focus on symmetries. We prove structure theorems which give a complete description of the symmetry groups for these packings and show that all 17 wallpaper groups appear in the symmetry groups of our packings. The infinite circle packings we study may reveal number theory and group theory properties of great interest, which remain to be further explored.

Yang, Destiny

Institution: *MN - Hamline University*

Discipline: Chemistry/Materials Science

Author/Contributors:
Julia Hintermeister,
Destiny Yang

Abstract Name: Water Treatment by Cold Atmosphere Plasma

The purpose of this project was to quantify and investigate the mechanisms used to degrade perfluorooctanoic acid (PFOA), an emerging contaminant, through exposure to an electrically charged tungsten electrode to water discharge cold-atmospheric pressure (CAP) plasma jet. PFOA was commonly used in man-made products for commercial, industrial, and firefighting purposes, which had led to widespread contamination of groundwater and drinking water. CAP is an emerging technology undergoing intense research to understand what reactive species are produced during experimentation and how it can be used as an effective system for water treatment. A 20 micromolar solution of PFOA was exposed to plasma ignited in both air and argon gasses at a wattage of 10 ± 1 W. Under these conditions,a substantial amount of PFOA degradation occurred with argon and air plasma treatments in positive polarity. PFOA was seen to degrade an average of 54.6% when using an argon gas feed, and 50.0% when using an air gas feed after 40 minutes of treatment. These results indicate that argon plasma is a better conductor for the removal of PFOA from contaminated water. Additionally, CAP does not require expensive or wasteful resources, and does not generate harmful by-products. This project demonstrates that CAP is a promising green alternative to current water treatment processes in use.

Yang, MALEE

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Race, Gender, & Sexuality Studies

Author/Contributors:
MALEE YANG,
Julia Lee

Abstract Name: Hmong in France: History and Identity in an Age of Globalization

This study examines the experiences of Hmong refugees resettled to France after the end of the Vietnam War in 1975. The data in this study is drawn from twenty-six in-depth interviews conducted with Hmong in France in cities such as Paris, Lyon, Nimes, and Toulouse. Hmong refugees continue to experience various challenges nearly fifty years after their migration to France. This study undertakes a sustained examination of various themes, including the transformations of Hmong identity and religion, experiences of racism, their community building efforts, their histories of labor, and their hopes and dreams, all within the French national context. Since the French Republican model formally erases racial, ethnic, religious, and cultural differences among its citizens, Hmong in France have had to devise creative strategies to maintain a distinct sense of self apart from dominant French nationalism. Yet, the French Republican ideology of official colorblindness continues to inhibit the development of a strong Hmong identity and their community building efforts. Furthermore, actual racism and discrimination on the ground have profoundly shaped Hmong's exclusion from education, housing, and employment. This study attempts to provide a humane and ethical portrait of Hmong French experiences in the age of globalization, when ethnic and cultural identities, religious practices, and minoritized experiences of living are all constantly being transformed. Together, the study shows that while Hmong continue to face extreme challenges to community building in ways that demand their assimilation into a colorblind French society, they have nonetheless successfully maintained a unique sense of self in a French society by dreaming and hoping for alternative futures.

Yang, Mengyuan

Institution: *PA - Swarthmore College*

Discipline: Mathematics

Author/Contributors:
Mengyuan Yang,
David Yang,
Philip Rehwinkel,
Ian Whitehead

Abstract Name: **Circle Packings from Tilings of the Plane**

Any circle configuration has a tangency graph, with a vertex for each circle and an edge for each tangency between circles. The well-known Apollonian circle packing can be constructed from a set of four base circles and a set of four dual circles, each of which has tetrahedral tangency graphs. The orbit of the base circles under the group generated by reflections through the dual circles is the packing, an infinite fractal set of circles.In general, one can start with a finite set of base circles whose tangency graph is the graph of any polyhedron and a finite set of dual circles whose tangency graph is the graph of the dual polyhedron. The orbit of the base circles under the group generated by the dual circles is known as a polyhedral packing, defined by Kontorovich and Nakamura. We study packings which originate from infinite configurations of base and dual circles, a further generalization. We introduce a new class of fractal circle packings in the plane and discuss its relation to crystallographic and Klenian circle packings. The existence and uniqueness of these packings are guaranteed by infinite versions of the Koebe-Andreev-Thurston theorem. The three main circle packings we study are the triangular, square, and hexagonal packings. We focus on their arithmetic properties--integrality, super-integrality, and quadratic and linear forms. We also give a broader class of examples (trapezohedron, cupola, and anticupola circle packings), with a focus on symmetries. We prove structure theorems which give a complete description of the symmetry groups for these packings and show that all 17 wallpaper groups appear in the symmetry groups of our packings. The infinite circle packings we study may reveal number theory and group theory properties of great interest, which remain to be further explored.

Yang, Yizhuo

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Yizhuo Yang

Abstract Name: **Cinematizing Immunity: The Rhetorical Effects of Science Fiction in the Public Communication of Science**

Rapid developments in computer-generated imaging (CGI) technology have enabled increasingly realistic visuals of both “science” and “fiction.” Drawing inspiration from and emulating the science fiction genre, producers of science documentaries can now harness the power of CGI and bring to the screen what was previously unseeable, communicating scientific facts more engagingly. While superficially an appealing trend, these increasingly science-fictionalized documentaries can be ethically problematic for public audiences, who are outsiders to actual scientific research. While not focused exclusively on the use of CGI, scholars such as Kirby (2008), Buehl (2016) and Lee (2022) have investigated the role of science fiction in public communication of science. Scholarship about using these documentaries for education, however, is inconclusive, as much remains unknown on the rhetorical effects of such documentaries on visual science communication, especially during public health crises. My research furthers discussion in this area by rhetorically analyzing the BBC’s 2012 CGI documentary, Our Secret Universe: Hidden Life of the Cell, which draws extensive references from famous science fiction films through cinematic techniques and which uses CGI to stage an epic war between human cells and viruses. My findings show that Secret Universe, although persuasive and visually appealing, leaves much of its awe-inspiring and overly militaristic narrative open to interpretation. Furthermore, its epic warfare narrative may promote ethically noxious messages on the nature of viruses, vaccines, and the meaning of immunological fitness. By communicating immunology through science fiction, Secret Universe illustrates that such an approach, although appealing, may also harbor undesirable outcomes and promote harmful ideals, especially when viewed in the context of global pandemics such as SARS, H1N1 and Covid-19.

Yap, Jaimie

Institution: *FL - Florida Atlantic University*

Discipline: Communication/Journalism

Author/Contributors:
Jaimie Yap

Abstract Name: "Just Teasing" or "UnJust" Insulting?

The purpose of my research is to examine if outsider views on bantering scenarios are influenced by multiple factors such as demographics, recognized nonverbal cues, and personal experiences. Limited work has been conducted on the communicative act of teasing. Starting with how teasing is defined, various definitions for teasing exist, making such incidents open to interpretation. More current definitions of teasing define the act as a comment made with hidden meaning because the teaser's motives often are left unarticulated. Because of this, a tease is generally left open to interpretation, especially by the receiver. The research I am conducting attempts to extend upon this prior research by identifying how our perceptions of teasing relate to common definitions. A knowledge gap occurs in understanding if people relate more to a tease initiator or person teased and how that influences their viewpoint. A knowledge gap also occurs in understanding if an outsider can pick up nonverbal interpersonal cues when viewing a bantering situation. To fill both knowledge gaps, I will conduct two trials. In both trials, participants will anonymously complete an online survey through Qualtrics, where they will be randomly assigned a 20-30 second video of a bantering scenario. Participants will then evaluate the quality of the interaction observed and answer personal questions about their own experiences with teasing or bullying. Data collected will be analyzed to determine what variables are most influential to a participant's viewpoint. Based on preliminary data, I predict results will show nonverbal presentation has a significant impact on an observers' perception of the teasing scenarios, with factors such as gender and personal experience holding the most influence over interpretations given. My research will help determine if teasing trauma carries over and either clouds or clears judgment so we can truly understand the weight of our words.

Yelich, Zach

Institution: *VA - James Madison University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Courtney Forberg,
Archer Peacock,
Rebecca Romero,
Grace Taylor,
Zach Yelich,
Stephanie Stockwell

Abstract Name: The Future of Plastic Waste: A Multi-Disciplinary Approach

Approximately 300 million tons of plastic waste is produced every year worldwide; only ~7-9% is recycled.The result is harmful plastic waste accumulation that negatively impacts ecosystems and communities around the world. Polyethylene terephthalate(PET) is one of the most abundant plastics due to its transparency and chemical strength. While naturally occurring PET-degrading bacterial enzymes have been identified (i.e., PETase and MHETase), their physiological requirements make them ill-suited for industrial use. We attempted to address this problem by bioengineering a chimeric PETase::MHETase protein for enhanced PET degradation. Review of recent literature revealed a collection of PETase and MHETase-optimizing mutations shown to enhance temperature and pH tolerance. Building from this work, our approach was to combine these nucleic acid changes into a single modified open reading frame (ORF) to support even greater PET degradation capabilities. The synthetic plasmid DNA construct was transformed intoE. coliand expressed to produce a novel chimeric protein. The biomanufactured product was purified by nickel column chromatography and quality-tested using standard assays. Finally, functional assays allowed us to measure PET plastic degradation. Recognizing that typical practices in life science laboratories are part of the plastic waste problem, our team explored and implemented ways to make our laboratory—and others like it—more sustainable. Additional methodologies from the field of STS (Science, Technology and Society) were used to consider, imagine, and develop greater understanding of the implications of plastic waste and how a bioremediation-based solution might be implemented in the future.

Yengo, Zach

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Devon Crews *Zach Yengo* *Karl Welbes*
Connor Smith *Tanner Deist*

Abstract Name: Effect of Postural Variations on On-Task Behavior in a College Classroom Setting

Background/Study Purpose: Strategies to increase cognitive performance should be explored to increase increased attention during class in higher education. The purpose of this study was to examine the impact of sitting in a chair (traditional sitting), sitting on a physio-ball (physio-ball sitting), and standing in the classroom on on-task behavior (OTB) in undergraduate seniors. Methods: Sixteen college students, ages 20-21 years, rotated through three postures (two classes per posture) that were randomly assigned. The classes were observed for a 40-minute period, and OTB rating of 0 = "not on task" vs. 1 = "on task" was recorded 10 times (every four minutes) per class. Results: Average two-rater interrater reliability scores were 95.6% across the six data collection days. Each participant's OTB scores were averaged between the two classes per posture. Percentages of perfect scores (scores of 10 out of 10) were calculated, and all postures had an "on-task" rate of greater than 90%. Physio-ball sitting had the lowest percentage of perfect scores. One-way repeated measures analysis of variance indicated a significant different in OTB across the three postures (.05). Post-hoc multiple comparisons using paired samples t-tests with an adjusted alpha of .0167 revealed significant difference in OTB between traditional sitting and physio-ball sitting (p = .005). There were no significant differences in OTB for traditional sitting vs. standing (p = .110) and for standing vs. physio-ball sitting (p = .351). Conclusions: Findings of the study suggest that physio-ball sitting may decrease OTB during class; however, the current sample demonstrated high overall OTB, possibly for being seniors enrolled in a course required by the major. It would be of interest to examine the impact of postural variations on OTB for a larger class size with a more diverse group of undergraduate students.

Yeo, Jeongyoon

Institution: ***IL - Northwestern University***

Discipline: Biology

Author/Contributors:
Jeongyoon Yeo,
Erik Andersen

Abstract Name: Using High-Throughput Assays and Computational Tools to Identify Novel Genetic Regulators of Cadmium Susceptibility

Cadmium is a non-essential trace metal that causes extreme toxicity in organisms when exposed at high concentrations. To counteract cadmium exposure, the body activates intracellular defense and repair mechanisms driven by expression of cadmium-induced stress-responsive genes. These genes vary across natural populations where exposure to cadmium can differ across landscapes. We can use the roundworm nematode Caenorhabditis elegans and leverage quantitative genetics to understand how these genes can influence one's susceptibility to cadmium. Quantitative genetic approaches were used to locate and associate molecular markers across chromosomes with phenotypic variation. In a genome-wide association study (GWAS) of 195 C. elegans strains, we conducted an established high-throughput phenotyping platform and genome-wide association mapping. The mapping revealed two different genomic intervals on the X chromosome associated with cadmium sensitivity. We also discovered that the JU3132 strain was resistant to the toxic effects of cadmium, while the NIC255 strain was sensitive. We aim to validate the two identified quantitative trait loci (QTL) that cause variation in cadmium susceptibility by generating chromosome substitution strains (CSSs) and near-isogenic lines (NILs). The same high-throughput phenotyping platform will be used on the CSSs and NILs to validate the effects of the discovered QTL on cadmium susceptibility. We can further narrow the identified genes by leveraging CRISPR-Cas9 gene editing to cut or insert the candidate genes.

Yeoh, Dorcas

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: **Communication Science and Disorders**

Author/Contributors:
Daniel Azarshin *Dorcas Yeoh* *Bryan Brown*

Abstract Name: **Does Correcting Errors Improve Graduate Students' Ability to Write Accurate Stuttering Treatment Plans?**

For the past few decades, speech-language pathologists and graduate students have continued to report feeling under-prepared and having low self-efficacy in regard to working with adolescents who stutter. In an effort to increase self-efficacy and preparedness, two groups of graduate students participated in a class activity where they worked in teams to identify, explain, and correct unambiguous errors in case studies involving adolescents who stutter. The errors could be goals and activities that do not align with client values or goals that do not align with treatment protocol (e.g., stuttering modification, fluency shaping or a combination approach). To measure progress, students completed a knowledge and self-efficacy self-assessment and designed a treatment plan for an adolescent who stutters at two different times. Once before the error-correcting activity and again after the activity. Self-assessments were designed to measure the students' self-perceived knowledge and self-efficacy of their ability to provide treatment to people who stutter. Treatment plans were completed so that the researchers could assess the students' understanding of treating stuttering. Treatment plans were scored by a rubric that examined internal consistency, appreciation of client values and rationale. The research team reached consensus during scoring. Differences in survey ratings and treatment plan scores pre-activity and post-activity were analyzed after the course was completed, to maintain anonymity.Data analysis is ongoing. Our preliminary research findings show that there are 10 domains where the students' knowledge increased from pre-assessment to post-assessment. These domains include: reducing frequency, reducing severity, reducing tension, identifying disfluencies, speech goals, thought goals, emotion goals, bullying assertiveness, and social goals. Students also reported to have better self-efficacy in regard to working with children who stutter after the error-correcting activity. We are presently in the midst of analyzing the treatment plans. Data analysis will be complete by the end of the semester.

Yerabolu, Krishin

Institution: *AL - University of Alabama at Birmingham*

Discipline: **Public Health**

Author/Contributors:
Krishin Yerabolu *Naman Shetty* *Nirav Patel*
Vibhu Parcha *Akhil Pampana* *Marguerite Irvin*
Pradeep Natarajan *Henry Lin* *Xiuqing Guo*
Stephen Rich *Jerome Rotter* *Peng Li*
Suzanne Oparil *Garima Arora* *Pankaj Arora*

Abstract Name: **Blood Pressure Trajectories and Genetic Risk of Hypertension**

Introduction: Hypertension affects one in two US adults. Due to the strong heritability of hypertension, genetic variations may explain a large portion of the variation in blood pressure (BP). This study assessed the trajectory of BP traits based on the genetic risk of hypertension. Methods: Polygenic risk score (PRS) combines the risk contributed by common genetic variants into a single indicator. For this study, the PRS was generated using the continuous shrinkage method from the systolic BP genome-wide association study summary statistics derived from 417,001 individuals in the UK Biobank and applied to individuals genotyped under the TransOmics for Precision Medicine Program. Using the PRS, individuals were classified into low (<20th percentile), intermediate (20th-80th percentile), and high (>80th percentile) PRS groups. Blood pressure values were corrected for antihypertensive use (systolic:+15mmHg, diastolic:+10mmHg). The Kruskal-Wallis test was used to compare BP traits across PRS categories stratified by age. Restricted cubic splines were used to depict the non-linear relationship of BP traits with age stratified by PRS categories. Results: Among 25,251 participants (median age: 53.4 years; 55.9% women; 38.5% non-white population), the median systolic (131 vs.116 mmHg) and diastolic BP (78 vs. 71 mmHg) were higher in the high PRS group compared with the low PRS group (p:<0.001). On stratifying by age, higher systolic and diastolic BP values in the high PRS compared with the low PRS group across the age range were noted (Table). The systolic BP was consistently and incrementally higher with higher genetic risk for hypertension across the age range (likelihood ratio test $\chi 2$: 108 for systolic BP; $\chi 2$: 61 for diastolic BP; p:<0.001) (Figure). Conclusions: The trajectory of BP traits varied with the genetic risk of hypertension. Clinical implementation of PRS may allow identification and promote primordial prevention strategies in individuals at a higher risk of developing hypertension.

Yeskie, Colleen

Institution: *WI - University of Wisconsin-Green Bay*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Colleen Yeskie

Abstract Name: **Development of An Unknown Barbier Organozinc Lab for Organic Chemistry?**

Barbier-type organozinc reactions have been used as Green Chemistry substitution (or additions) for Grignard reactions. The organozinc reactions use less organic solvent, as the main nucleophilic addition occurs under aqueous conditions. This can be preferable to the sensitivity to moisture that occurs with Grignard reactions, while also using Green Chemistry principles. The original organozinc lab uses 3-pentanone as the substrate and is run for 60 minutes. However, our idea is to extend to other ketone substrates and potentially longer run times, then have students try to determine their starting material based on acquired IR and NMR spectra. Multiple substrates were tested using original reaction conditions and analyzed by IR, NMR, and gas chromatography (for purity).Analysis of the results shows that the Barbier organozinc reaction is successful on a variety of ketones. Some of the products are pure enough to allow students to determine the original ketone. Spectra of various products along with standard conditions will be discussed on the poster.

Yin, Zexi

Institution: *IA - Iowa State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Zexi Yin,
Bo Yang,
Sunghwan Kim,
Halil Ceylan

Abstract Name: **Use of Iowa Eggshell Waste as Bio Cement Materials in Pavement and Gravel Road Geo-Material Stabilization**

Egg production in Iowa is important to the state economy and the national market. The Iowa egg industry's production strategy is to provide approximately 70 percent of its eggs in liquid or dry form to reduce its freight costs and increase competitiveness, so the large volumes of discarded eggshells generated by the Iowa egg industry during production have broad prospects for recycling as value-added products. Eggshells mainly composed of calcium carbonate (CaCO3) (i.e., up to 94%) were identified as the main element of calcium-based stabilizer material (CSM). Through further treatments, such as milling and grinding, oven-dry, calcination, and bleach, eggshell powder (ESP) could contain up to 98% calcium oxide (CaO) formed from CaCO3. The literature summary indicates ESP possesses the ability to bind soil and aggregates through multiple reactions, such as hydration, cation exchange, flocculation, and pozzolanic reactions. Therefore, eggshells can be used as bio-based cementitious materials for stabilizing subgrade and base course in road structures. As part of the Iowa Highway Research Board-sponsored research project, this study explored the feasibility of using eggshell waste as a CSM to improve the engineering properties of Iowa pavement foundations or gravel road systems. The experimental plan will examine the performance of ESP stabilization on Iowa subgrade and base materials through a series of laboratory testing, including Atterberg limits, compaction characteristics, unconfined compressive strength (UCS), California bearing ratio (CBR), and free-thaw durability. The various ESP treatment methods and types of Iowa subgrade/base aggregate will be assessed as well. This innovative and sustainable approach could lead to stronger, more durable pavement foundations and gravel road systems in Iowa.

Yonts, William

Institution: ***CA - Chapman University***

Discipline: General Humanities/Interdisciplinary Studies

Author/Contributors:
William Yonts

Abstract Name: Cinematic Myth Today and Myth?s Deconstruction in "The Phantom of Liberty"

In this paper I look at how Barthes' concept of the myth applies to visual media and cinema, how audiovisual images function to instill a falsely natural correlation between a signifier and its signified. Drawing from the characteristics of myth noted by Claude Levi-Strauss, Barthes defines myth as a semiological system with "the task of giving an historical intention a natural justification, and making contingency appear eternal". He goes further than Levi-Strauss by emphasizing not only the content of myths but their reception, noting that the function of a myth is to make a myth-reader believe that it "naturally conjured up the concept, as if the signifier gave a foundation to the signified". I link his ideas to the apparatus theory of Jean-Louis Baudry who argues that the synthesis of the mechanisms of film making and exhibition forges "an 'organic' unity" wherein disparate images are presented as if naturally correlated. I also look at how the cinematic apparatus has changed in the digital age; how audiovisual myth finds new avenues to present itself to myth-consumers when people's everyday experience is constantly mediated. Ultimately, using Luis Buñuel's film The Phantom of Liberty as an example, I examine the ways in which films can work to deconstruct myth. They can do so by documenting their own construction, as noted by Baudry, or in Barthes' terms they can increase "the abstractness of the concept and the arbitrariness of the sign" to capture "the meaning of things themselves," both of which The Phantom of Liberty accomplishes.

Yosufzai, Safa

Institution: ***VA - George Mason University***

Discipline: Public Health

Author/Contributors:
Safa Yosufzai *Juliett Bonnah* *Basma Almansour*
Aamna Sohail *Raghad Al-Wazeer* *Adriana Vanegas*
Ishika Ahmed *Neriman Ozeren*

Abstract Name: Identifying breast cancer education message preferences among Black college students using conjoint analysis.

Black women have excessively high breast cancer mortality rates. This disparity is due in part to the higher incidence of aggressive breast cancer among Black women under the age of 40. Early-detection and early treatment lead to significantly lower mortality rates. However, sociocultural barriers, such as lack of perceived risk for breast cancer, impede adherence to breast cancer screening guidelines for young many Black women. Cancer education interventions that are focused on increasing knowledge about breast cancer, breast cancer risk, and breast cancer screening methods have been shown to be effective at increasing breast cancer screening rates. The purpose of study is to determine the most effective way to deliver culturally-relevant breast cancer education messages to young Black women via social media. Culturally-relevant breast cancer education messages in the form of social media posts were developed using the Intervention Mapping Framework. The messages are based on the constructs of the Health Belief Model, and previous qualitative research with the target population. Conjoint analysis will be conducted with a sample of Black college-aged women. We will assess the participants preference for message frame (gain frame vs. loss frame), message format (illustration vs. photo), and message source (Black female peer vs. Black female healthcare provider vs. healthcare provider of another race and gender). Regression Analysis will be performed to determine the most desirable elements of the messages. The results of this study will be used to finalize the cancer education messages. The messages will be disseminated via social media sights.

Youdes, Caroline

Institution: *KY - University of Kentucky*

Discipline: Nursing/Health Science

Author/Contributors:
Caroline Youdes *An-Hsuan Lin* *Aaron Chacon*
Zhenheng Guo *Ming Gong*

Abstract Name: **Characterization of GLP-1 Receptor Expression in Flox & Knockout Mice**

Type 2 Diabetes mellitus (T2DM) is one of the most prevalent and costly diseases concerning modern society, characterized by impaired insulin action, inducing chronic hyperglycemia. Glucagon-like peptide-1 (GLP-1) receptor agonists (RAs) are an emerging class of drugs proven extremely effective in treating T2DM and obesity. GLP-1 is a peptide secreted by enteroendocrine L cells along the digestive tract. Secreted GLP-1 acts on the pancreas to stimulate insulin, inhibit glucagon secretion, and suppress appetite. Challenges in GLP-1R research are antibody specificity and inconsistent effects of knocking out GLP-1R globally. This study aims to examine the efficacy of tamoxifen-induced knockout of GLP1-R on protein, mRNA, and DNA levels.Breeding of Glp-1r loxP-flanked (flox) mice with tamoxifen-inducible ubiquitous Cre (UBC-Cre-ERT2) mice on a C57Bl/6 genetic background results in Cre-mediated deletion of Glp-1r in widespread tissues. The flox Glp-1r sequence is greater than 6000 bp, but after cleavage is 387 bp. The 30 second annealing step in the PCR protocol allows only for amplification of sequences less than 500 bp. Results reflected successful cleavage of Glp-1r. Western blotting identified that, among the three GLP-1R antibodies tested, the ProteinTech antibody most efficaciously detects GLP-1R, showing significant difference between GLP-1R flox and KO mice in duodenum (0.05) and a trend toward significance (p=0.08) in hypothalamus. A highly significant difference in GLP-1R mRNA expression was observed in flox and KO mice via qRT-PCR of duodenum (0.0001) and hypothalamus (0.01). Neither western blotting nor qRT-PCR identified a significant difference in liver tissue.Results support effectiveness of tamoxifen-induced GLP-1R knockout in duodenum and hypothalamus. GLP-1R KO in the liver demonstrates low success, potentially attributable to uneven Cre expression. In the future, we hope this novel mouse model may be used for GLP-1R experiments examining its relationship to comorbidities of T2D.

Young, Bailey

Institution: *UT - University of Utah*

Discipline: Biology

Author/Contributors:
Bailey Young,
Mike Shapiro

Abstract Name: **In Darwin's Footsteps: A Shared Genetic Control for Beak and Toe Size in Domestic Pigeons (Columba livia)**

Domestic rock pigeons (Columba livia) display an incredible amount of variation among different breeds. Even though they can look and act differently, these breeds all belong to the same species. We are therefore able to breed individuals with very different traits and perform genetic mapping. For example, variation at a locus on Chromosome Z, ROR2, is linked to beak size. In The Variation of Plants and Animals Under Domestication, Darwin observed that the data he collected “indicate pretty plainly some kind of correlation between the length of the beak and the size of the feet”. The goal of my research is to determine whether there is a shared genetic control of foot size and beak size in domestic rock pigeons. First, I collected limb length measurements from the F2 generation of a cross between a Homer (medium beaked) and an Old German Owl (small beaked) pigeon. This cross segregates different beak lengths so it presents an ideal opportunity to test for associations between beak and toe lengths. My data confirmed that foot and beak size are indeed associated. Next, I used quantitative trait locus (QTL) mapping and found that toe size is controlled by at least two genetic loci, one of which maps to the same genomic region that controls beak length. Therefore, it is likely that toe size and beak length have a shared genetic control or are controlled by closely linked genes. Thus, variation in one genomic region – and possibly one gene – can potentially lead to coordinated changes in seemingly unrelated anatomical structures.

Young, Ben

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Benjamin Young *Scott Clark* *Lillian Strehlow*

Abstract Name: Campuswide Sustainability: Designing an Early Intervention Training Module to Cultivate a Sustainably Minded Culture

Implementation of sustainable practices are being pursued at universities across the globe. However, getting student buy-in to adopt sustainable habits can be challenging. Over a seven-year period, the University of Wisconsin-Eau Claire has collected data on student behavior as they discard lunchtime waste and conducted audits on the waste found in the compost, recycle, and landfill bins. That data has been used in multiple intervention attempts to educate students on proper waste-sorting when having access to those bins. These interventions have had limited success in generating a statistically significant shift in student behaviors. During the 2022-2023 academic year, we are pursuing a new effort with the goal of preemptively educating students on multiple aspects of sustainability before they arrive on campus. Our university currently requires incoming students to participate in online training modules on topics such as sexual assault awareness (Title IX), equity diversity and inclusion, and information security. We have received approval to add a sustainability-focused online training module for incoming students. We are designing a module that will focus on four sustainability topics: campus-wide sustainability goals, public transportation routes, using the campus's reusable food container program, and proper waste-sorting habits. Each topic will contain microlessons consisting of readings and videos. Each microlesson has questions that must be answered before the student can progress. Our goals are to educate students on effective sustainability practices, encourage them to adopt those practices as incoming students, and for them to see our campus as a place that values sustainability. We will assess the effectiveness of this intervention through future waste audits, observational studies of student behavior and survey responses. Our training module is intended to be used by all incoming students and we expect that our audits and survey results will reflect wider adoption as more and more students complete the training.

Young, Grant

Institution: ***LA - University of Louisiana at Lafayette***

Discipline: Nursing/Health Science

Author/Contributors:
Julian Cecil *Grant Young* *Jacob Allain*

Abstract Name: Music Brings a Smile to My Face: Assessing the Effects of Familiar Music on Happiness in Older Adults Living in Long Term Care

The positive effect of music on overall health and psychological well-being has been well documented. In older adults, listening to music has been correlated to positive emotions, happiness, increased mental awareness, and decreased stress levels. Further, implementing music therapy/programs in long-term care facilities has resulted in improved depression symptoms, improved well-being, and decreased use of mood stabilizing medications. For purposes of this project, only happiness was measured, but aspredicted there wasan improvement in several other aspects of the participants' health and well-being. It is anticipated that this program will be continued beyond the designated four week mark because of interest in the service aspect of the project from current students.This programallowed students from complementary disciplines to participate in a research project that assessedthe effects of familiar music on happiness in older adults living in long term care. Two nursing students and a recent psychology graduate, who were all well versed in Cajun and Zydeco music performed a one-hour music set once a week for four weeks for residents of a local assisted living facility. Permission was granted by the the facility and all COVID protocols were followed. Approval was also obtained from the university's IRB department prior to implementation of the program. Prior to the first music program, residents were asked to complete a reliable and validated, Subjective Happiness Scale, consisting of 4 questions with Likert scale responses via pen and paper. Students, with the assistance of their faculty advisors, enteredthis data into the Intellectus software program. At the end of the fourth/final music set, residents wereonce againasked to complete the Subjective Happiness Scale. Students are inputting post project scale data into the Intellectus software program. Data will beanalyzed using a paired t-test to evaluate effectiveness of this intervention.

Youngblood, Rachel

Institution: *AL - Auburn University*

Discipline: Education

Author/Contributors:
Rachel Youngblood *Robin Costello* *Julia Le*
Amelia Radocha *Emily Driessen* *Melissa Kjelvik*
Elizabeth Schultheis *Ash Zemenick* *Marjorie Weber*
Cissy Ballen

Abstract Name: **Exposure to Counterstereotypical Scientific Role Models Impact how Students Identify with and Perceive Scientists**

To test the hypothesis that diversifying and humanizing scientists impact student perceptions, we measured (1) the extent to which students related to a counterstereotypical scientist and (2) how students viewed the types of people who do science. Students worked on a biology activity that highlighted counterstereotypical contemporary scientists but that varied in the depth to which students learned about the scientists: in treatment one, the biology activity was not accompanied by a picture of the scientist or humanizing information; in treatment two, the activity included a picture but no humanizing information; in treatment three, the activity included a picture and an extended 'About Me' section that included humanizing information. We recruited 34 biology instructors across the United States, and they randomly implemented one of the three treatments (N > 1700 students). We collected survey data across the semester from three surveys administered at the end of each biology activity. We analyzed open-ended responses to the prompts: (1) "Describe how you related to the featured scientist" and (2) "What did you learn about the types of people who do science?". Two researchers used qualitative coding in order to obtain the student logic behind their reasoning. We found that for the first prompt (1) students who engaged in treatment three, an activity that also included a picture and an extended 'About Me' section highlighting the scientist, were more likely to relate to diversifying elements of the scientist than students who received no information about the scientist or just a picture. For the second prompt (2), we found that students exposed to treatment three were most likely to report that scientists have diverse identities. Our results underscore the importance of highlighting counterstereotypical scientists during biology activities.

Youngblood, Taylor

Institution: *FL - Florida Atlantic University*

Discipline: Business

Author/Contributors:
Taylor Youngblood

Abstract Name: **Tipping Culture in America**

In America, there is a striking escalation of tipping in coffee shops, restaurants, salons, and more. According to articles in Forbes and New York Times, there are many passionate users debating about tipping and other writers revealing their own beliefs on tipping. This common etiquette has strong controversy regarding its necessity and effect. The purpose of this study is to analyze people's views on tipping. I believed that there would be more agreeance about tipping among the older generations. To test this hypothesis, I wrote a survey of 15 questions using Survey Monkey and collected the data through Amazon MTurk with the sample for the analysis consisting of 196 participants over 18 years of age residing in the United States. The results indicated a statistically significant difference in responses among the participants' gender and age and how these demographics affected their idea of the amount and necessity of tipping. This survey can help to understand consumers and the reasoning for the amount of gratuity they leave behind.

Youssef, Elsaid

Institution: *PA - Villanova University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Elsaid Youssef,
John Schofield,
Alfonso Ortega

Abstract Name: **Enhancement of Two-Phase Immersion Cooling Using Submerged Synthetic Jet Impingement on Simulated High-Power Electronic Components**

Electronics used in data centers include high-performance servers which contain CPUs, GPUs, and power distribution elements. As the processing units get faster, their power dissipation increases in direct proportion. Liquid cooling has emerged in two primary methods as the next step in the evolution of cooling technologies. (1.) Indirect cooling involves placing a cold plate on top of the hot component and circulating liquid through it. (2.) Direct cooling involves immersion cooling in which the server is immersed in dielectric fluid. This project investigates the improvements to two-phase immersion cooling in which 3M Novec 7100 Engineered fluid boils on the component surface, causing vapor bubbles to form. The bubbles leave the surface by their own buoyancy, and fresh liquid flows in to replace the departing vapor. This research examines the enhanced performance of two-phase immersion cooling by forcing a liquid jet to impinge on a boiling vertical heated surface using a synthetic jet approach. The figure of merit is the heat transfer coefficient on the boiling surface, h= q''/(Tsurface-Tsat).A synthetic jet is a jet formed by providing a time-dependent flow into and out of a nozzle submerged in the fluid. The nozzle expels a jet flow in the forward stroke half cycle and ingests inflow during the backstroke half cycle. This periodic flow has no net mass flux but a positive momentum flux. The hypothesis is that the impinging jet will force the bubbles off the surface at a faster rate, thus accelerating the bubble formation cycle which controls pool boiling. The objective is to evaluate the efficacy of jet impingement on increasing heat transfer by documenting the increases in the heat transfer coefficient as a function of heat flux, synthetic jet frequency and amplitude, and distance from jet to target.

Yu, Ethan

Institution: *TX - The University of Texas at Austin*

Discipline: Chemistry/Materials Science

Author/Contributors:
Daniela Garcia *Susanna Kim* *Jessica Richardson*
Christian Robles *Ethan Yu* *Karen Chahda*
Maximiliano Ledesma *Mindy Tran* *Diana Zamora-Olivares*
Eric Anslyn

Abstract Name: **Classification of Seaweeds and Tannin Characterization Using Differential Sensing and Untargeted Mass Spectrometry-based Metabolomics**

Ruminating animals account for nearly half of global methane emissions. Recently, several types of brown seaweed have been identified to reduce enteric methane emissions when supplemented in ruminant animal diets, as methane production is highly linked to the composition of the feedstock. Tannins are a class of polyphenolic molecules that are abundant in brown seaweeds with protein binding properties that play a role in methane reduction. Therefore, it is of importance to study seaweed tannin composition to understand the impacts when presented in livestock feed.Herein, we investigated both the phenolic and metabolic profile of four species of brown seaweeds - Ascophyllum nodosum, Fucus serratus, Fucus vesiculosus, and Fucus spiralis - obtained by Professor Pamela Walsh at Queen's University Belfast. The first aim was to classify each seaweed based on its tannin fingerprint through differential sensing. The second aim was to characterize metabolites in each sample by applying untargeted mass spectrometry-based metabolomics.A fraction of the seaweed extracts was utilized for differential sensing analysis to detect existing tannins. In adding the seaweed extracts to the peptidic array, the tannins displaced the indicators from peptidic ensembles via Indicator Displacement Assays (IDAs), giving measurable absorbance changes. Principal Component Analysis (PCA) and Linear Discriminant Analysis (LDA) were utilized to analyze the polydimensional data and the seaweed species were correctly differentiated with 100% accuracy according to their tannin composition. Furthermore, the seaweeds were classified according to their genus where the Fucus samples were found clustered together while distinctly separated from the Ascophyllum genus.Finally, another fraction of seaweed extracts was analyzed with a high-resolution mass spectrometer to characterize their metabolomic profile. The standard untargeted metabolomic workflow includes 1) experimental analysis using HR-MS 2) data preprocessing and validation, and 3) data analysis to identify putative biomarkers. Currently, we are working with stages 2 and 3.

Yu, Zhongyue

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Earth & Environmental Sciences

Author/Contributors:
Papia Rozario,
Rahul Gomes,
Laney Ruehmann,
Tianqi Sun,
Tyler Pham,
Zhongyue Yu

Abstract Name: Exploring Hyperspectral Image Classification using Deep Learning

Classification of hyperspectral images is an important step of image interpretation from high spatial resolution imagery. Different studies demonstrate that spatial features can provide complementary information for increasing the accuracy of hyperspectral image classification. In this study, we propose a method of spectral-spatial classification of hyperspectral images that is based on a hybrid feature selection approach with stacked autoencoders. The resulting high-dimensional vectors of spectral features are classified by several supervised classification algorithms such as support vector machine (SVM), maximum likelihood (ML) and random forest (RF). The experiments are performed on several widely known test hyperspectral images. Preliminary results have demonstrated that the proposed method provides a higher accuracy matrix than existing traditional models.

Yuan, Tommy

Institution: ***NY - Guttman Community College***

Discipline: Computer Science/Information Systems

Author/Contributors:
Tommy Yuan

Abstract Name: Strategy Evaluation and Automated Strategy Acquisition for Game 2048

The goal of this work is to acquire effective, computerized strategies to play the popular puzzle game "2048". The game has a 4x4 tiled board with numbers of 2 or 4 randomly added to blank tiles over time between the player's moves. The player can choose to slide numbers up, down, left, or right into blank tiles, and any two adjacent tiles with the same number will collide and collapse into one tile having the sum. The game terminates either when the largest number reaches 2048 or when the board is full with no possible movements. Although the game is straightforward for a human player, it is not trivial but rather challenging to play in a computerized fashion. Indeed, enthusiasts have designed various computerized strategies for 2048. For instance, one strategy is minimax, which chooses the move that produces the best outcome at the worst-case scenario. Another strategy, expectimax, evaluates moves based on their outcomes at the average-case scenario rather than the worst-case scenario.We have built a Java program that supports both manual and computerized plays and allows easy implementation and execution of computerized strategies. We have started to implement existing strategies in the literature and compare their performances against those of our own. Our ultimate goal is to design a parameterized framework that covers a broad range of strategies and use the genetic algorithm - an optimization method in AI that mimics the evolutionary process in the biological world - to automatically acquire effective strategies for 2048.As far as we are aware, our work is one of the first in automated acquisition of such strategies for 2048. We believe our work would shed light on the process of tackling similar games and provide insights into the effectiveness of relevant AI methods and techniques.

Yuk, Ivan

Institution: *FL - Florida Atlantic University*

Discipline: Economics

Author/Contributors:
Ivan Yuk

Abstract Name: **How Social Media Has Impacted the Perception of Investing**

There has been a surge of interest in finance-related topics and investing after the COVID-19 pandemic, which is attributed to the rise of easy-to-access trading platforms such as Robinhood. Social media platforms have significantly increased public interest in investing. For example, the internationally reported event of the GameStop short squeeze brought over 5 million new members to reddit group WallStreetBets. This event was organized on Reddit, which propelled other social media platforms like Instagram and TikTok into the investing sphere. The purpose of this study is to analyze the impacts of social media on investing trends and investor sentiment. Furthermore, this study examines if there is a shift from mainstream media to social media as a source of investment advice. To do this, I conducted a 16-question survey through Amazon Mechanical Turk and collected 189 responses. Then, I ran statistical analysis and crosstabulation in order to identify if there was any statistically significant difference with gender and age in relation to how often one views investing related news or posts on social media, and how that impacts how individuals themselves view investing as a whole. I found that while younger individuals have a positive view on how social media impacts their financial literacy, the percentage that maintain this positive view decreases as age increases. I also see a statistically significant difference in the responses of males and females, with more males investing because of social media than females.

Yumul, Kim

Institution: *CA - California State University - Fullerton*

Discipline: Biology

Author/Contributors:
Kim Yumul,
Leeza-Marie Rodriguez,
Brandon Quintana,
Danielle Zacherl

Abstract Name: **Effects of Non-Native Watersipora on the Abundance and Percent Cover of Native Olympia Oysters, Ostrea lurida**

Non-native fouling organisms settling onto natural hard substrata in estuaries can harm native species via mechanisms like space competition and predation. Understanding how non-native foulers influence native species recruitment is critical for management of native species. The effects of the non-native bryozoan, Watersipora subtorquata, and other native and non-native foulers onOstrea lurida recruitment were studied to determine whether their percent cover affects native oyster abundance and cover. Terracotta tiles were deployed in Newport Bay, California at tidal elevations between -0.5 and -1.0 feet MLLW during the oyster's spawning and recruitment season. Four treatment groups (n=10 per treatment) were established to examine the effects of foulers on O. luridarecruitment: unmanipulated controls, W. subtorquata removal, other fouler removal, and all fouler removal. Treatments were maintained by monthly removal of W. subtorquata and other foulers as appropriate per treatment from March-September 2022. Oysters recruiting to the tiles were measured for length and width, identified, and quantified. Point contact technique was used to record cover of species recruiting to tiles. We hypothesized that presence of W. subtorquata and other foulers would lead to low abundance and cover of O. lurida recruits. Surprisingly, W. subtorquata and other foulers had no significant effect on abundance or cover of O. lurida. Fouling species, including ubiquitous non-natives like W. subtorquata, may not be as harmful to native species in local estuarine habitats as predicted. However, our 6-mo study may have been too short-term to detect space competition since open space was still available across all treatments.

Yusuf, Tibirni

Institution: *TN - University of Memphis*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Tibirni Yusuf *Zoe Harrison, PhD* *Emily C. Montgomery*
J. Amber Jennings, PhD

Abstract Name: **Cytocompatibility of Electrospun Chitosan Membranes Treated with Decanoic Anhydride and loaded with Biofilm Inhibitors and Bupivacaine**

Cellular responses to loaded electrospun membranes have previously been shown to promote healing in wound applications such as burns by reducing pain, preventing infection, and modifying inflammatory responses through the release of local anesthetics. In this study, we use RAW264.7 mouse cells, a transformed macrophage-like cell line, to observe expression of inflammatory and anti-inflammatory cytokines and cell response to decanoic anhydride(DA) treated chitosan membranes loaded with therapeutics, both with and without stimulation with Lipopolysaccharide(LPS). RAW cells are generally loosely adherent and simple to detach from a plate, detaching after scraping the remaining adherent cells gently with a cell scraper. LPS is a bacterial polysaccharide that activates this macrophage cell type and drives them into inflammatory phenotypes present in wounded tissue. Macrophages are extremely sensitive to LPS endotoxin from Gram-negative bacteria. Electrospun chitosan membranes treated with fatty acid decanoic anhydride were placed in a 24 well plate and loaded with either 0.15mg of anti-biofilm cis-2-decenoic aid(C2DA), 0.5mg of local anesthetic Bupivacaine, or a combination of the two in ethanol(combo). Each membrane was loaded with a total of 30µL of solution, except for the unloaded membranes, which served as the control. The effect of membranes exposed to RAW cells, both in the presence of LPS and not, were observed to simulate acute response and inflammatory phases of wound healing. We hypothesized that RAW cells will express inflammatory or anti-inflammatory proteins in the presence of different concentrations of therapeutics. Results suggest that BUP and 2CP groups without LPS are cytocompatible, as they were not significantly different than the control. Comparatively, 2CP and combo groups are cytocompatible for activated macrophages. Statistically significant differences, tested using ANOVA followed by Tukey's multiple comparisons test, also demonstrateda minimal effect of DA treated membranes on the cellular inflammatory response of RAW cells in the presence of LPS.

Zacher, Peter

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Keith Dowell,
Peter Zacher,
Deidra Gerlach

Abstract Name: **Synthesis of flexible tridentate pincer ligands featuring a rigid backbone and pendant carbene**

Catalysts are involved in the production of fuels and feedstock chemicals and are even found in living organisms as enzymes. An important classification of catalysts are organometallic complexes whose identity and reactivity are correlated to the coordination sphere defined by its ligand(s). Tridentate pincer ligands, which coordinate to a metal center via three different atoms within a plane, have been of interest for redox active and polymerization catalysis among other catalyzed reactions. Our interest is to explore the incorporation of flexibility to an asymmetric pincer ligand to identify which geometric or electronic properties influence catalytic behavior. Variation in ligand flexibility may afford unique properties that tune the action of the metal center. We are developing a ligand to feature two unique imine-N and pendant N-heterocyclic carbene-C to complex with a metal. The ligand is labeled as an NNC-type ligand by the three elements that coordinate to the metal; nitrogen, nitrogen, and carbon. Our NNC ligand features a bisimine rigid backbone and a pendant N-heterocyclic carbene which can flex to accommodate a range of coordination motifs of pentacoordinate complexes. Presented is the multi-step synthesis using air-sensitive techniques and the precursor structures that have been identified. Molecules obtained throughout the process are analyzed using 1H-NMR, FT-IR, single crystal XRD and computational analysis for prediction of optimal geometry of the target organometallic complexes. Future work will detail the properties of precursors and the synthetic approaches to metallate the NNC tridentate pincer ligand with first-row transition metals.

Zacher III, Peter

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Chemistry/Materials Science

Author/Contributors:
Anna Claire,
Danielle Lehto,
Peter Zacher III,
Krysti Knoche Gupta

Abstract Name: **Electrochemical Characterization of Recast Nafion? Film Modified Electrodes in Nonaqueous Systems**

The behavior of recast Nafion® films on platinum working electrodes in nonaqueous solutions is characterized by cyclic voltammetry and rotating disk voltammetry. The behavior of recast Nafion® films in nonaqueous solutions has been observed to be different from the well-studied behavior in aqueous solutions. This work seeks to extensively study that behavior. The reversible redox couple tris(2,2′-bipyridine)ruthenium(II) hexafluorophosphate is studied in nonaqueous solvent acetonitrile with different electrolytes (tetrabutylammonium tetrafluoroborate, tetrabutylammonium trifluoromethanesulfonate, tetrabutylammonium hexafluorophosphate, and ammonium trifluoromethanesulfonate). The effects of the electrolytes will be compared against each other and controls (an unmodified platinum electrode and a recast Nafion® platinum electrode equilibrated in aqueous solutions of the redox couples). Electrolytes have been chosen for a variety of ion charges and ion sizes; in aqueous solutions, Nafion® is a cation exchange polymer and will exclude neutral and anionic redox molecules, however this does not necessarily occur in nonaqueous solutions. Additionally, there is some preliminary evidence that trifluoromethanesulfonate electrolyte may interact with the Nafion® sulfonate groups, so this will also be explored. Studies of each electrolyte variation will involve both transient cyclic voltammetry and rotating disk voltammetry; the relationship between scan rate and peak current will be explored for transient cyclic voltammograms and the relationship between rotation rate and limiting current will be explored for rotating disk voltammetry. The data from both techniques will be combined to identify the thickness of the in situ film and the diffusion coefficient for each variation.

Zachman, Josie

Institution: *AL - University of Alabama*

Discipline: Psychology/Neuroscience

Author/Contributors:
Josie Zachman *Rajesh Kana* *Smitha Karavallil Achuthan*

Abstract Name: **Independent Component Analysis of Resting State Brain Connectivity in Autism**

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that is characterized by deficits in social communication as well as restrictive and repetitive patterns of behaviors and interests. Differences in brain functional connectivity (the synchronization of brain activity across spatially distant regions) between autistic and non-autistic individuals, especially in resting-networks such as the default mode network (DMN), have been reported. Neuroimaging, especially through advances in modern Functional Magnetic Resonance Imaging (fMRI) and task-free resting-state techniques have provided significant insights into brain functioning and connectivity in typical and atypical populations without the need for active cognitive tasks. Applying data-driven techniques like the Independent Component Analysis (ICA) to resting state fMRI data can provide valuable insights into the brain functioning in autistic individuals. ICA extracts and separates data from the entirety of the fMRI brain scans, and then groups them together based on similarity. The current study examines the functional differences in resting brain connectivity between autistic and non-autistic children with special emphasis on key brain networks like the DMN. Eyes-open resting fMRI data were collected from 33 autistic and non-autistic children (ages 7-13 years) on a Siemens Prisma 3T MRI scanner. After sorting the components based on their correlation values (from higher to lower), the ICA revealed several large-scale networks that were particularly active across both autistic and non-autistic children: the DMN, the visual network (VN), the dorsal attention network (DAN), the language network (LN), the sensorimotor network (SMN), the cerebellar network (CN), and the frontal-parietal network (FPN). The autistic children showed significantly weaker DMN connectivity, and stronger DAN and FPN connectivity compared to non-autistic children. These findings align with the disrupted connectivity hypothesis (hyper and hypo connectivity) in autistic individuals. Examining these patterns and their impact on the neurocognitive profiles of autism can provide valuable insights into autism symptomology.

Zagurski, Cleo

Institution: *NE - Creighton University*

Discipline: Public Health

Author/Contributors:
Cleo Zagurski

Abstract Name: **Transitioning Towards Transgender Inclusive Language Within Primary Medical Education: A Content Analysis on Language Change Throughout Textbooks**

Inclusivity expectations within medical settings have changed over the past three decades based on shifting social norms. New additions to the practice of medicine, through the training of physicians, have been influenced by movements happening in the greater social sphere. The discussion of intersectional identities such as racial diversity, gender, and LGBTQIA+ individuals is a possible adaptation to medical educational materials. I hypothesized that occurrences of transgender language would increase over time within primary care textbooks. The inclusion of cultural competency and diversity-related topics within past editions of primary care textbooks makes it more likely for current editions of the same text to include transgender-related language. This hypothesis was tested through the utilization of content analysis on 913 chapters from five titles and 21 individual textbooks. A coding scheme was used to collect data based on five separate variables specifically looking at the number of mentions and connotations associated with the identified code words. STATA was used to analyze the data collected. It was found that between 2003-2022 there was an increase in language referring to diversity, LGBTQIA+, and transgender patients within the selected primary care textbooks. There are no substantial correlations between diversity mentions and LGBTQIA+ or transgender-focused mentions. Within the chapters selected, less than 1% included mentions of transgender-focused language. My findings indicate an avenue for growth within the field of primary care textbook writing and publishing.

Zahn, Danielle

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Public Health

Author/Contributors:
Oksana Laura Horstman,
Ethan Ahlbrecht,
Trinity Wilson,
Danielle Zahn

Abstract Name: **Investigation of Ventilation and Air Quality in Classrooms**

The transmission of the coronavirus can be greatly impacted by indoor ventilation and air purifiers according to the U.S. Environmental Protection Agency and other public and private institutions and researchers. The concentration of aerosols in the air that contain the virus can be reduced by proper ventilation systems, which circulate and filter the air for increased quality. Aerosols with a diameter of2.5µm or lessare a possible carrier of SARS-CoV-2. PM 2.5 pollution may also increase the cellular expression of ACE2, associated with greater viral susceptibility. Ventilation to reduce PM 2.5 levels addresses both risks. Tests using incense as an indicator before, during, and after burning were used to see how quickly the ventilation in the rooms was able to remove excess PM 2.5. A calibrated DustTrak II monitor was used to record particulate matter, then Honeywell HEPA air purifiers were emplaced to see if further purification would aid in ventilation compared to only an HVAC system. Room air exchange rates (ACH, hr-1) were calculated using a spreadsheet by Jimenez at UC-Boulder. ACH rates in a small (15 person) meeting room were 5.88 hr-1 with HVAC alone and 16 hr-1 with two added air purifiers. Corresponding rates in an average (35 person) classroom were 9.62 hr-1 and 12.0 hr-1 with a single purifier. In this case, HVAC and air purifier coverage was 1.25–2.72 times as efficient as just HVAC coverage. Results for local weightlifting rooms are currently being investigated and will be included. A limitation of this research was the occasional pooling of incense smoke near the opening of the air monitor leading to a temporary spike in PM 2.5 levels. Use offans can address this issue. HEPA air purifiers reduce PM 2.5 levels and in turn may help lessen transmission risk of SARS-CoV-2 aerosols and airborne viruses

Zahn, Danielle

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Biology

Author/Contributors:
Danielle Zahn

Abstract Name: Screening for Novel Antibiotic Producers

The continual emergence of antibiotic resistant microbes is of great concern in the medical community. Many pathogenic bacteria previously susceptible to common antibiotic treatments have evolved resistance, resulting in serious medical and public health concerns. Infections caused by these resistant bacteria are not only costly, but difficult to treat. In response to this growing crisis, we aim to identify novel antibiotic producing microbes that we have isolated from soil samples. These samples have been collected from a variety of locations and underwent testing to determine the presence of produced substances that inhibit or kill one or more of several tester strains (Escherichia coli, Enterococcus faecalis, Staphylococcus aureus, Salmonella enteritidis, or Sityphimurium). Several organisms from soil samples that produce these antimicrobial substances have been isolated and underwent physiological characterization and rRNA gene sequencing to reveal possible identities.

Zahn, Elizabeth

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Economics

Author/Contributors:
Morgan Dekan *Annabelle Howat* *Abby McCullough*

Abstract Name: Examining Low-Income Household Shopping with Supplemental Nutrition Assistance Program Benefits at the Eau Claire Downtown Farmers? Market Using the Market Match Incentive Program From 2018-2022

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. In 2020, COVID-19 increased the number of families facing food insecurity while the ECFM also faced challenges regarding how to operate safely. This poster uses administrative data to analyze shopping by SNAP households at the ECDFM using the MMP between 2018-2022. The number of SNAP households shopping at the ECDFM increased in 2020 and 2021 while the associated spending also increased in both years as the SNAP caseload was rising due to the pandemic. As the SNAP caseload declined to about the same level as in 2020, the number of SNAP households shopping at the ECDFM using the MMP and the corresponding spending declined in 2022. The remainder of this study provides more detailed results regarding the patterns in SNAP household shopping at the ECDFM using the MMP over this period. This poster is connected to a another submitted poster analyzing a variety of data from surveys of SNAP households shopping at the ECDFM using the MMP during these years.

Zaidi, Sohail

Institution: *CA - San Jose State University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Alberto Navarro,
Pranav Satyadeep,
Sohail Zaidi,
Vimal Viswanathan

Abstract Name: **Modeling a Bifacial Solar Panel for Characterization and Performance Evaluation**

Bifacial solar panels are gaining attention due to their superior performance that comes from their ability to generate additional output power (5-10%) by absorbing the solar irradiance from the back surface. Bifacial PV modules still need to be characterized for their overall performance. To evaluate the performance of the bifacial PV modules, attempts are underway at San Jose State University to develop a solar model along with a thermal analysis model that will be then validated by our experimental data. In the current presentation, a thermal analysis model developed for a bifacial PV model is included. For this purpose, a JJN Solar Panel 200 W bifacial PV panel was selected. Basic measurements include the short circuit current and open circuit voltages at various operating conditions. The thermal analysis model includes the basic structure of the panel by considering various layers of the PV module e.g., front surface with antireflection (AR) coating, followed by an emitter layer (P+ Si) and N type wafer that is followed by aluminum back surface layer with AR coating. Thermal conductivities and respective thicknesses of all layers were used to complete the thermal resistance model that was then used to find panel's surface temperatures by keeping a constant flux condition on both the front and back surfaces. Depending on the incident flux, surface temperatures were found varying from 50 to 60 C at the front side as compared to 35 – 30 degrees on the back side of the PV model. For he electrical modeling, five parameters equivalent circuit model proposed by MA et. al. [2019] was employed. Skockley diode equation was modified for the PV panel and IV characteristics were plotted by obtaining the data from the experiment. Final poster will include the details on our experiments and the associated results.

Zain, Muhammad

Institution: *TX - San Jacinto College*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Muhammad Zain

Abstract Name: **The Impact of Monoculture Turfgrasses on Soil Nutrient Content in Southeast Houston Topsoil**

It has been shown in multiple studies that turfgrass lawns make up nearly 70% of green places in the urban world. Besides its aesthetic look, turfgrass does not provide any other benefit. In fact, it has been shown to have many adverse consequences. To even manage a turfgrass lawn to the degree that most Americans require, they would need an excess amount of water usage, an extraordinary number of fertilizers, and lastly, time. This knowledge has been known for decades, but the public has yet to understand the consequences. Even though much knowledge of turfgrass is known, one area that is not currently well researched is the impact of soil nutrient content from monoculture turfgrass lawns. It is well known that the use of monoculture methods in agriculture will have adverse effects on soil nutrition, but whether this can be correlated in gardening circumstances is yet to be seen. This situation opens a gap in the knowledge of turfgrass that could incentivize the United States government further to encourage the favoring of native biodiversity over monoculture turfgrasses. This gap in the research will be the focus of this study due to the fact it can help lead to the reduction of monoculture turfgrass lawns. Lowing the use of turfgrass can prevent water consumption, lessen fertilizer usage, and provide habitats for wildlife. The content of this research focuses on collecting and preparing samples from different area around Houston, testing for the pH values, nitrogen, phosphorous, and potassium content from each sample using testing vessels. The research also includes the x-ray analysis of samples of different monoculture turfgrasses to determine the percentage of nitrogen, potassium, and phosphorus, the essential nutrients of the soil.

Zaiteva, Daryna

Institution: ***OH - Capital University***

Discipline: Nursing/Health Science

Author/Contributors:
Daryna Zaitseva,
Sara Fathala

Abstract Name: The Accuracy of Gluten-free Labeling in European and Middle Eastern Food Products Compared to Samples from the United States

Gluten is a protein complex found in wheat, barley, and rye, and even in foods that do not normally contain these grains. Previous work in this lab has shown that 29.8% of labeled “gluten free” products made in the United States (n = 248) have significant amounts of gluten in them (20 ppm). The current study was designed to investigate the reliability of “gluten-free” food labels in the international consumer marketplace. This research helps to inform and potentially caution those with gluten intolerance, especially with Celiac disease, to avoid gluten cross contamination and be skeptical of the gluten levels in food products advertised as “gluten-free”. A total of 49 samples labeled “gluten-free” were obtained from grocery stores in Europe and the Middle East; samples were manufactured in 18 countries there. A Nima Gluten Sensor (antibody based colorimetric assay) was used to determine if gluten content was 20ppm, the maximum allowed by the European Commission and local Middle Eastern countries, for a product labeled “gluten free”. Of the 49 samples tested, 41 of them were confirmed to be “gluten free” (20ppm), with only 8 (16.3%) having significant levels of gluten. When European and Middle Eastern samples are compared to those from the US, it appears that the food from these countries are more accurately labeled than in the United States; the percent of samples with measurable gluten is approximately half of that for products produced in the US. While gluten-free labeling can be trusted in most cases, the risk of cross contamination with gluten is still possible and continues to pose some risks to those who are gluten intolerant.

Zamarripa, Kat

Institution: ***MN - St. Catherine University***

Discipline: Public Health

Author/Contributors:
Kat Zamarripa,
Ambria Crusan

Abstract Name: Addressing the Longevity of Positive Health Status in Immigrant, Hispanic/Latin Communities Using the PROMIS Scale- Global Health Instrument

Migrants may be disproportionately at risk for poor mental or physical health due to migration status, limiting access to health care or poor mental health because of traumatic or stressful experiences. Additionally, social determinants of health, literacy, and low cultural competency result in poor healthcare education. A gap in the literature surrounding the perception of physical and mental wellbeing in Hispanic/Latin adults exists. Our objective is to understand the perceptions of health dimensions using the PROMIS Scale and individual interviews for an immigrant, Hispanic/Latin community. A 21-question survey was administered to 46 patients (36 women, 10 men) at St. Mary’s Health Clinic in St. Paul, MN. The participants are immigrants, self identify as Hispanic or Latin, have low income, and are uninsured. The survey utilized the Phenx demographic toolkit, the PROMIS Scale V 1.2– Global Health instrument, and the USDA 6-question food security screening tool to collect demographic information, perceptions of health, and food security status. The average age of participants in the sample of 46 patients was 42.8 years. All of the participants reported average or above average for general health. None of the participants reported poor health. For physical and mental health, 89.8% of participants reported good or excellent health. Social activities and roles were rated above good or fair for 100% of participants. 54.3% of participants are able to completely carry out everyday physical activities and only 2.2% reported inability. Qualitative data was obtained from 6 in-person interviews in which participants answered questions regarding perceptions in the dimensions of health. A variety of health perceptions emerged after the qualitative interviews. Overall, the importance of balancing the dimensions of wellness was communicated.

Zamora, Megan

Institution: *TX - The University of Texas Rio Grande Valley*

Discipline: Kinesiology/Physical & Occupational Therapy

Author/Contributors:
Megan Zamora *Marco Arriaga* *Jorge Bejar*
Sue Anne Chew Ph.D. *Murat Karabulut Ph.D.*

Abstract Name: **Acute Salivary Hormonal Responses to Resistance Training Exercises with and Without Blood Flow Restriction**

PURPOSE: The purpose of this study was to examine the effects of different resistance exercise protocols on salivary cortisol (C), growth hormone (GH), and testosterone (T) concentrations, heart rate (HR), and rate of perceived exertion (RPE). METHODS: Eight males and eight females (age = 21.8 ± 2.6) performed three randomly assigned exercise protocols on separate occasions: low-intensity resistance training (RT) exercises with blood flow restriction (BFR) at 20% of one repetition maximum (1-RM) (BFR20), moderate-intensity RT exercises with BFR at 40% of 1-RM (BFR40), and traditional high-intensity RT exercises at 80% of 1-RM (HI80). Participants completed 2-3 circuits of four sets in the leg press and leg extension machines. Saliva samples were collected before and immediately after each exercise session and stored at -80 ℃ for later analysis with ELISA. RESULTS: No significant differences in any of the three hormone concentrations were noted between conditions, but significant increases in C (0.039), GH (0.01), and T (0.015) concentrations were seen from pre- to post-exercise. The BFR40 condition resulted in significantly lower HR values in the leg press when compared to BFR20 (0.037), and HI80 (0.01). HI80 resulted in higher RPE values in the leg press when compared to BFR40 (0.01) and BFR20 (0.012). The HI80 condition resulted in significantly higher HR values in the leg extension when compared to BFR40 (0.01). Lastly, BFR20 (0.033) and HI80 (0.01) resulted in significantly higher RPE values in leg extension compared to BFR40. CONCLUSION: Both BFR and HI exercise protocols resulted in similar level of glucocorticoid and anabolic hormone responses, but there are differences in objective (i.e., HR) and subjective level of exertion (i.e., RPE). Even though acute responses of the BFR20 session with lowest training volume and intensity was the most similar to HI80, training-related chronic adaptations may be different.

Zanca, LaShae

Institution: *MT - Montana State University - Bozeman*

Discipline: Biology

Author/Contributors:
LaShae Zanca *B. Tegner Jacobson* *Jessica DeWit,*
Kerri Jones *Steven Jones* *Abrielle Kaker,*
Kelsey Wright *Kaitlyn Andujo* *Audrey DeZell,*
Catherine Debasitis *Diane Bimczok*

Abstract Name: **Health metric scoring for specific-pathogen-free sheep infected with Mycoplasma ovipneumoniae shows greater severity of infection in the lower respiratory tract**

Mycoplasma ovipneumoniae (M. ovi) is a facultative pathogen that colonizes the respiratory tract in ruminants. The focus of this study was to determine whether the route of M. ovi administration would impact clinical disease in specific-pathogen-free (SPF) sheep - upper versus lower respiratory tract (URT and LRT). We hypothesize that pathogen administration directly into the LRT would lead to more severe disease. Four to five 2 - 3 month old domestic SPF lambs per group were experimentally infected via treated nasal wash from infected sheep intratracheally (LRT), nasally (URT), or remained uninfected. The sheep were monitored daily after PCR confirmed infection, and scored based on their health following pathogen administration. We used a 0-5 point system for the following criteria: general behavior, appetite, body temperature, clinical signs, and medications/treatment. A low score indicated the absence of symptoms while a high score indicated the presence of symptoms.We compared the total scores between the control sheep and infected sheep for the LRT/URT infections. There was a significant increase in the average total score from 0.387 for the control to 1.660 for the LRT infection (Student's t-test, 0.0001), and from 0.303 for the control to 1.075 for the URT infection (Student's t-test, 0.0001). In addition, the LRT total score mean of 1.660 showed a significant increase from the URT score mean of 1.075 (Student's t-test, 0.0001), supporting our hypothesis that LRT infection increases severity when compared to the URT infection. These results show that the establishment of infection resulted in significant clinical signs and that the LRT infection resulted in increased severity of infection as compared to the URT.

Zaprzalka, Kacper

Institution: *WI - University of Wisconsin-Milwaukee*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Kacper Zaprzalka

Abstract Name: Mix Down Altitude Based Wind Gust Prediction During Various Weather Types

A wind gust is fast moving air high up in the atmosphere that is mixed down to the surface, with stronger winds typically being found higher up in the atmosphere. Wind gusts are important factors of a weather forecast because they cause damages to structures and in turn can affect the economy negatively. Forecasting these wind gusts is a challenging task for operational weather forecasters and evaluating the accuracy of gust forecasts is an issue because wind gusts are only reported during the last 10 minutes of the hour, rather than the entire hour. This causes a large portion of wind gust reports during each hour to go unreported. Recently, work in the Meteorologically Stratified Gust Factor Model at the University of Wisconsin-Milwaukee derived a database that recorded the true surface wind gust across all minutes of the hour between 2010-2017 at many stations across the country. With this database, the ratio of peak wind gust speed to mean wind speed at the surface was developed to accurately forecast a speed and direction-specific gust. In this project, we are using the same database that was derived in the Meteorologically Stratified Gust Factor Model to create a new wind gust forecasting model. We analyze various weather types across several stations across the country and determine a relationship between the mix down altitude of wind gusts. Preliminary results show that there is a noticeable pattern with mix down altitudes for wind gusts at each station. By utilizing this information, one can better forecast an accurate wind gust at the surface, which in turn will work as a tool that can not only be used by forecasters to improve accuracy, but also to make cost effective decisions.

Zarraga, Valentina

Institution: *TX - San Jacinto College*

Discipline: Political Science

Author/Contributors:
Valentina Zarraga

Abstract Name: Car Dependency and Transportation System in Houston

For many decades, Houston has been a very car-dependent city. In certain parts of the city's interior, it is possible to get around by bus, light rail, bicycle or even walking, however for most people who live in the surrounding suburbs, use of public transportation is not very feasible. Because housing tends to be more expensive in densely populated areas in which public transportation is more readily available, people of low socioeconomic status are often pushed to the suburbs. This has a negative impact on them because they many times cannot afford cars and struggle to find the transportation necessary to secure basic needs. These suburbs are characterized by wide highways and long distances, making transportation even more difficult. For most of Houston's residents living in the suburbs, getting to the places that they need to go to in their daily lives such as school, work, or grocery stores is nearly impossible, and the efforts made by the government to improve transit have not been very effective in this city exclusively designed for cars. While 50% of Houstonians report desiring to have a more walkable lifestyle, the government has failed to adequately meet that desire. This presentation will explore the various factors that might explain that disconnect between the desire and policy. Part of that explanation will look at low ridership, stigma of public transportation as a welfare project, and the vicious cycle that comes from public stigma and lack of funding. While this presentation will use Houston as a case study, the hope is that it can offer a generalized appeal for future urban planners to take into account nationwide, as this car dependency case is present in many other cities around the United States.

Zavala, Rey

Institution: *CA - California State University - San Bernardino*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Rick Bhaskara *Rey Zavala* *David Calderon*

Abstract Name: **Development of Photocrosslinking Click Chemistry Probes to Investigate the Function of Falcilysin, an Essential Malarial Metalloprotease**

Human malaria is a parasitic disease caused by 6 different Plasmodium species, leading to approximately 600,000 annual deaths. All clinical symptoms of the disease result from the intraerythrocytic development of the parasite. During this part of the life cycle, the parasite expresses an array of proteases to carry out many essential processes, such as host cell protein degradation, host cell invasion, and parasite protein export. Falcilysin (FLN) is an essential metalloprotease expressed by the parasite during intraerythrocytic infection, and it is known to function in host hemoglobin degradation and in processing of apicoplast-targeted parasite proteins. Recent studies have identified FLN as a target of the clinical antimalarial drug chloroquine, and it appears likely that the protease carries out additional roles in the cell.We are developing chemical tools to enable further investigation of FLN biology and its potential as a chemotherapeutic target. Here we report our work to synthesize and evaluate a series of piperazine-based hydroxamic acids as inhibitors of FLN. As well as incorporating photocrosslinking and click chemistry moieties into the scaffold. These studies will provide the rationale for the development of increasingly potent FLN inhibitors while identifying possible off-targets in the cell.This work builds upon our previous research by further optimizing the N1 position on the piperazine core. We synthesized and tested a series of 10+ compounds with diverse substituents which were installed using a range of synthetic methodologies. In a subset of compounds we incorporated diazirine and alkyne moieties to enable identification of cellular targets using a combination of photocrosslinking and click chemistry. All compounds were tested against cultured parasites and purified FLN, and we identified additional structural requirements for potent inhibition of FLN. Multiple inhibitors were discovered with similar or improved potency relative to our previous lead compounds.

Zaw, Aye

Institution: *IL - Elmhurst University*

Discipline: **International Studies**

Author/Contributors:
Aye Zaw

Abstract Name: **What is Happening in Myanmar: Post-Colonial Violence, Decolonial Revolution**

Violence is endemic in Burma. For over 70 years, the country has been home to the longest running civil war in the world. However, on the 1st of February 2021, Burma's short 'democracy' ended abruptly through a coup conducted by the Burmese military, the Tatmattaw and since, the country has seen the severity and extent of violence worsen. This latest iteration of Burma's endemic violence nevertheless provides an opportunity to look at the unique characteristics and motivations of this violence that emerged in post-coup Burma. Through Franz Fanon's critical framework in The Wretched Of the Earth, this paper analyzes the colonial roots of Burma's military oppression and the people's resistance against it, and finds that Fanon's descriptions of the colonial experience illustrate a distinction between the post-colonial and the decolonial. On Violence reveals the violence inherent in the colonial arrangement and how the violence of the oppressed is eventually always directed towards decolonization. However, failed or insufficient decolonial movements leads to 'independent' post-colonial states left with colonial laws, institutions, and ideas, which remain destructive long after the colonial armies leave. Parallels between Burma's colonial and post-colonial experiences indicates that Burma's endemic violence have its roots in colonial institutions, and thus, a post-colonial phenomenon i.e., Burma is not decolonized. This project uses historical text and contemporary sources to show the colonial legacy of modern-day Burma. This includes historical texts in both English and Burmese, social media sites, and even firsthand observations of the violence while in the country from February to December 2021. Burma, unfortunately, remains one of the prime examples of post-colonial intra-state violence and conflict and this paper offers a nuanced Fanon-informed analysisto provide a broader understanding of the current situation in Burma.

Zazubec, Alysha

Institution: *NY - SUNY Brockport*

Discipline: Earth & Environmental Sciences

Author/Contributors:
Alysha Zazubec

Abstract Name: **Biomarker analysis of the Eastern Himalaya Foreland Basin (EHFB) as a proxy for paleogeographic identification**

The deposits of the Eastern Himalayan Foreland Basin (EHFB) have recently spurred debate between a terrestrial fluvial and marginal marine setting. Previous studies have identified these deposits as fluvial sediments. Some recent studies of the Eastern Siwalik deposits from the Tista Valley, Bhutan, and Arunachal Pradesh have shown the presence of wave-generated sedimentary structures and marine trace fossils, indicating a marine deltaic depositional setting. Organic biomarkers are another helpful resource in determining and understanding the depositional environment. These geochemical analyses can differentiate between primarily aquatic or terrestrial plant assemblage. We analyzed n-alkane distribution, organic δ13C, and C/N ratio from 33 mudstone samples from the Neogene Siwalik deposits of Arunachal Pradesh, India. The samples were collected along the Siji River section in the eastern end of the foreland basin and spans across the Lower Siwalik Dafla (8 samples), Middle Siwalik Subansiri (4 samples), Upper Siwalik Siji (12 samples), and the Kimin (9 samples). Recent facies analysis identified Dafla as tidal, Subansiri as braided fluvial. Siji as shoal water fan delta and Kimin as alluvial fan or braided stream deposits. Seven Dafla and four Siji samples, show bimodal peaks centered on C19 and C31, indicating a mixture of marine and terrestrial matters. Ourdata set shows a strong correlation with the recently proposed facies distribution and supports a possible marine incursion in the Eastern Siwaliks.

Zbarska, Svitlana

Institution: *IA - Iowa State University*

Discipline: FAN Abstract

Author/Contributors:
Svitlana Zbarska

Abstract Name: **How to build a successful First-Year Mentor Program?**

The First-Year Honors Mentor program (FHMP) at Iowa State University is a successful high-impact practice that started in 1987. FHMP offers about 400 honors first-year honors students from all majors the opportunity to get research experience with faculty mentors. The main objectives of the FHMP are to develop students' interests in research involvement, to enhance their knowledge and understanding of the academic field, and to help them identify a research area for an honors capstone project. FHMP participants conduct research during the spring semester of their first year with an opportunity to continue during the following summer and fall semesters. At this presentation, you will learn about FHMP modules and schedules, including student recruitment, principals of matching mentors and mentees, the outline of the mentor training workshop, a list of students' requirements to complete the program, and variables to measure students' successes. To track and assess program outcomes, all student FHMP participants were asked to complete an entry and exit survey. The purpose of this assessment project is to assess how the FHMP impacts honor students' interests in continuing research throughout their academic careers. During the session, we will share these program outcomes:1) changes in the number of FHMP participants over the last twelve years and how it was affected by the COVID pandemic; 2) the demographic data and college distribution of the FHMP participants; 3) the number of FHMP participants who decided to continue research involvement in a following year 4) the number of FHMP participants who completed an honor capstone project and graduated with honors.

Zdankiewicz, Paul

Institution: *PA - Lafayette College*

Discipline: **Economics**

Author/Contributors:
Paul Zdankiewicz

Abstract Name: **Does Microcredit Improve Well-Being in Developing Countries?: Evidence from Ethiopia**

Credit helps people to finance investments, and therefore holds promise for the reduction of poverty in developing countries. However, access to credit is limited for low-income households in developing countries, particularly in rural areas. This is because it is difficult for commercial banks to determine debtors' trustworthiness in order to avoid intentional defaults, and because low-income households often have little transferable property to offer as collateral. One frequently proposed solution is microcredit, the provision of loans by microfinance institutions, such as the Nobel Peace Prize-winning Grameen Bank in Bangladesh. These loans are small in size and are offered without collateral to groups to make them obtainable for those with low incomes. For several decades, much literature has been dedicated to estimating the effectiveness of microcredit at improving the well-being of households in various countries and regions. However, no clear consensus has emerged on the international level. Since microfinance is more prevalent in Asia than in Africa, there is a relative shortage of research on African microcredit, including in Ethiopia. I am contributing to this literature by studying the impact of microfinance in Ethiopia using a nationally representative panel dataset of more than 4,000 rural households from three different periods. In order to estimate the impact of microcredit on poverty and housing improvements, I will use a two-way fixed effects model, which will control for time-invariant unobservable traits of borrowers that may be correlated both with the decision to borrow money and with these outcomes. Based on the most recent and relevant research in Ethiopia, I expect to find a positive relationship between the usage of microcredit and these outcomes.

Zehr, Cassie

Institution: *WI - University of Wisconsin-La Crosse*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Cassie Zehr

Abstract Name: **Structural Dynamics of a Hemolytic Protein**

A common technique utilized by pathogenic bacteria to infect hosts is the secretion of cytotoxic proteins, which break open host cells, exposing the bacteria to all the nutrients stored within. Proteus mirabilis, a gram-negative bacteria commonly associated with urinary tract infections, uses this very technique, secreting hemolysin A (HpmA) to infect hosts. Secretion of HpmA requires a second component, HpmB, located on the outer membrane of the cell. In this two-partner secretion pathway, HpmB couples the folding and transport of HpmA, allowing HpmA to achieve its folded and active form upon secretion. The proposed mechanism for this involves a Brownian Ratchet model, in which all energy for transport is derived from random motion of the protein within its environment. It is hypothesized that the β-helical HpmA is sequentially folded as it passes through HpmB, and that the folded segments serve as a mechanical stop, thus, ratcheting the protein down, preventing movement back into the cell. The β-helical structure of HpmA is characterized by circuits consisting of approximately 21 amino acids. To test if full circuits represent the mechanical stops, we have created a series of truncations variants that differ in length by a few amino acids. Using CD monitored denaturation experiments and functional experiments, we show that there are potential pause points of increased stability. To obtain a better understanding of the structural dynamics and stability of HpmA as they relate to the protein's mechanism of secretion, we are implementing NMR spectroscopy. The results of these various experiments will be discussed in the context of the Brownian Ratchet secretion model.

Zeng, Winnie

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Nursing/Health Science

Author/Contributors:
Winnie Zeng,
Leena Haataja,
Peter Arvan

Abstract Name: **The Effect of Oxidoreductases on Proinsulin Secretion**

Proinsulin is a precursor protein for the production of the hormone, insulin. Proinsulin is folded and oxidized in the endoplasmic reticulum (ER) of the pancreatic beta cell. The formation of native disulfide-bonds is essential for the ER quality control of proinsulin. Only the properly folded protein can leave the ER and enter the Golgi and post-Golgi compartments, where mature insulin is synthesized and stored. Oxidoreductases are enzymes that transfer electrons between two molecules. Specifically, the oxidoreductin ERO1a has been shown to increase proinsulin secretion. We are interested in examining the effects of oxidoreductases PDI, Erp72, P5, and Erp57 on proinsulin secretion. Bacteria will be transformed and plasmid DNA will be isolated. 293T cells will be transfected using Lipofectamine 2000 and after 24 hours, media will be collected and cells lysed. The samples will be resolved by SDS-PAGE page and transferred to nitrocellulose for western blotting, the membranes will be incubated with primary and secondary antibodies, and immunoblots will be developed using enhanced chemiluminescence. We expect these data to help determine the effect of individual oxidoreductases on the secretion of proinsulin. We will compare the results of our experiments to our positive control, ERO1a, and to the vector (negative) control. The results of this study should help us answer questions about which oxidoreductases are important players in proinsulin oxidation and secretion.

Zevitz, Elise

Institution: *WI - University of Wisconsin-Parkside*

Discipline: Chemistry/Materials Science

Author/Contributors:
Elise Zevitz *Hunter Cheney* *Trever Schneider*

Abstract Name: **Evaluation of esters of hydroxycinnamic acids as UVB-UVA filters in emulsion: A naturally sourced alternative to synthetic UV filters in commercial sunscreens**

Synthetic UV filters approved for use in US sunscreen formulations have come under increasing scrutiny in recent years due to the suspicion of undesirable effects on human health and the environment. A growing body of research points to their potential for endocrine disruption, and recent state legislation in both Florida and Hawaii banned two of the most common of such filters — octinoxate and oxybenzone — upon evidence of coral bleaching and toxicity to marine life. Plant-based hydroxycinnamic acids (HCAs) and their corresponding esters have been shown to absorb in the UVB-UVA (290–400nm) region of solar radiation. This study sought to evaluate the UV-filtration potential of these compounds in emulsion, against existing commercial sunscreen filters.In the first phase of the project, three HCA derivatives (ferulic acid, sinapic acid, and 3,4-Dimethoxycinnamic acid) were each converted into their respective ethyl esters by Fischer esterification under microwave irradiation. The same process was used to synthesize isopropyl esters of the three HCA derivatives. Following isolation and purification by column chromatography, each ester product was incorporated by weight in combination with up to 3% avobenzone into a separate sunscreen emulsion and subsequently applied to a polymethylmethacrylate plate for UV-Vis spectrophotometric transmittance testing.Nearly all HCA-based sunscreens performed on par with or more effectively in blocking UVB-UVA radiation than a commercial sunscreen formulation containing a combination of synthetic UV filters (specifically homosalate, octisalate, octocrylene, and 3% avobenzone) at a much higher concentration. Ethyl ferulate- and ethyl sinapate-based sunscreens offered the best coverage across the UVB and UVA range, minimizing the need for avobenzone.The in vitro data generated from this study suggest that each of the naturally sourced HCA-derivatives has the potential to offer an exciting alternative to the cocktail of synthetic UV filters in sunscreens currently available in the US.

Zhang, Xinyi

Institution: *GA - Emory University*

Discipline: English/Linguistics

Author/Contributors:
Yanlin Huang,
Xinyi Zhang

Abstract Name: **Relative Clause in Tibetan**

The aim of this study is to analyze the formation of Relative Clauses (hereafter RC) in Central Tibetan (Phjuik). Previous studies have suggested that the Tibetan relativization is a type of nominalization with multiple variations (pa, sa, mkhan, yag; DeLancey 1999). We elicited 328 words and sentences from two Central Tibetan speakers. Their ages range from late 20 to early 30, both from India, currently living in the United States. The current study confirms and extends previous findings in two ways: (1) Out of 4, three variants were confirmed, and (2) an additional vowel /i/ was found to follow the three variants, resulting in pronunciation change. As DeLancey (1999)'s data is from a female speaker in her 60's, the variant lost and a vowel addition could be due to a generation difference. An alternative explanation, especially on the /i/ vowel addition was explored in detail. /i/ vowel also appears in other noun phrases (hereafter NP), such as possessive NPs and genitive NPs. As RC is a type of NP in Tibetan, we propose that RC should be analyzed as a type of case, similar to possessive case and genitive case. The advantage of this proposal will be further discussed in terms of grammatical paradigm uniformity.

Zhang, Zhi

Institution: *IL - University of Chicago*

Discipline: Economics

Author/Contributors:
Zhi Zhang

Abstract Name: **U.S. Monetary Shocks and International Downside Risks Spillover**

Using quantile regression and orthogonalized high-frequency surprises, I estimate effects of US monetary shocks on international downside growth risks, in a panel of 20 AEs and EMEs from 1988-2016. It is shown that contractionary US monetary shocks lead to decreases in low quantiles of international projected growth, thereby amplifying downside risks up to 9 quarters after the shock. Heterogeneity exists in the magnitude of spillover at the country level, related to features including financial openness and market development, preceding financial conditions, and debt buildup. Furthermore, effects of shocks are largely insignificant for median and upside growth projections. The results suggest that US monetary surprises primarily impact the lower segment of conditional growth distributions of international economies, which might be hard to rationalize in a conventional setup via induced interest rate and risk premia changes. In view of the empirical estimates, I propose a financial constraint view of tail risks spillover, where US contractionary shocks tighten financial and credit constraints in foreign economies, contributing to amplification effects under downside growth realizations.

Zhao, Alison

Institution: *CA - University of California - San Diego*

Discipline: **Biology**

Author/Contributors:
Alison Zhao *Sophia Plant* *Angelica Vanderkerkhoff*, *Camila Marques de Freria* *Mark Tuszynski*

Abstract Name: **Rehabilitation Improves Functional Recovery and Induces IL-4 Signaling in Rats after Stroke**

Plasticity associated with the reorganization of cortical motor representations plays a critical role for enabling functional recovery following central nervous system (CNS) injuries, including stroke and traumatic brain injury. Such cortical plasticity was identified by the expansion of the rostral forelimb area (RFA) following lesions in the adjacent caudal forelimb area (CFA), which was significantly larger in cortex-lesioned animals that underwent rehabilitative training compared to animals without rehabilitation. Our preliminary study shows improved functional recovery in animals that underwent rehabilitative training. Further studies in our group have demonstrated that rehabilitation focused on skilled forelimb motor tasks robustly drives structural compensation, seen in enhancement of axon sprouting and dendritic architecture on neurons surrounding the perilesional cortex, in turn driving functional recovery. Additionally, RNA sequencing of RFA neurons identified Interleukin 4 (IL-4) signaling as one of the top canonical pathways associated with rehabilitation training after stroke. IL-4 has been shown to be secreted by glial cells or ischemic neurons as an endogenous mechanism of neuroprotection, playing a vital role in stroke repair. For this study we hypothesized that rehabilitation after cortical lesion increases the IL-4 secretion at the adjacent lesion area, thereby playing a vital role in the regulation of brain plasticity. Thus, this study aims to quantify rehabilitation-induced IL-4 regulation after stroke lesion in the RFA using q-PCR, as well as whether rehabilitation induces plasticity in the CFA at the contralateral side of the lesion area. To date, the molecular mechanisms of rehabilitation have not been identified. Using modern tools of neuroscience, we aim to parcel out the effects of rehabilitation on motor systems and to further utilize these findings towards improved therapies for ischemic spinal strokes.

Zhao, Tingzhe

Institution: *VA - James Madison University*

Discipline: **Engineering/Applied Sciences**

Author/Contributors:
Tingzhe Zhao,
Robert Prins

Abstract Name: **Management of 3D Printer G-code for Simulation of Malicious Attacks**

Increased digitization of manufacturing systems, referred to as “Industry 4.0”, includes machine-to-machine communications on the internet of things. In addition to the efficiencies realized, there are also additional opportunities for malicious attacks on the data that is being passed around. We focused on two types of manipulations involving thermal and cavity attacks associated with fused filament fabrication (a 3D printing process). The thermal and cavity attacks were generated through different methods at separate points of the manufacturing process. The cavity attacks were generated during the slicing process where software transforms the selected 3D model into a machine language known as G-code. A cavity is generated in the selected 3D model without disrupting the surface appearance. The said cavity takes the shape of a rectangle and can be adjusted to any size and/or location within the 3-dimensional space provided by the selected 3D model. This entire process happens before the G-code is generated, which differs from the methods of thermal attacks. The process of implementing thermal attacks happens after the 3D model’s transformation into G-code. A specific line of command that controls the nozzle temperature within the machine code is targeted and maliciously replaced with the new attack temperature. The new temperature can take the form of minor changes affecting part performance or major changes resulting in catastrophic failure. Material testing on both types of attacked parts was performed and compared back to non-attacked control specimens. The results further demonstrated the effects of malicious manipulations involving cavity and thermal attacks, all specimen data presented different degrees of structural integrity damage proportional to the severity of attacks performed.

Zhao, William

Institution: *CA - University of the Pacific*

Discipline: Biology

Author/Contributors:
William Zhao *Daniel Bui*

Abstract Name: **Integrating the Effects of Male Mating Calls and Food Availability on Flight and Reproduction**

In nature, organisms face environmental challenges in their pursuit to reproduce and pass on their genes. However, the allocation of resources towards reproduction can directly conflict with survival, which leads to a tradeoff between survival and reproduction. To navigate this tradeoff, animals can use information about the quality of their environment to make adaptive decisions. For example, a high-quality environment may favor reproductive investment while a low-quality environment favors survival. Yet, resource (e.g., food) availability may alter allocation or investment decisions. For example, resource limitation may favor survival regardless of cues related to environmental quality. Therefore, we used the variable field cricket (Gryllus lineaticeps) to study the roles of male song and resource availability in females' investment into survival (dispersal or flight capacity) and reproduction (ovary mass). Throughout early adulthood, each female was exposed to one of two acoustic environments (60-70 decibels)—either white noise (signaling a low quality, mate-free environment) or male cricket mating calls (signaling a high-quality environment with abundant mating opportunities). Females were supplied with unlimited or limited food. Flight capacity (investment into flight muscle) and reproductive investment (dry ovary mass) were measured in females to determine whether male song promoted reproduction at the expense of flight capacity, and food consumption was determined to assess whether the tradeoff between flight and reproduction is mediated by resource acquisition or availability. Our preliminary results with food-unlimited females indicate that male mating calls increase reproductive investment and reduce investment into flight/dispersal capacity. Song-induced differential investment was due to increased food take rather than an increased efficiency by which ingested food was converted into ovary mass. In sum, our work will inform the determinants of plasticity in two critical, but often competing, traits—reproduction and survival.

Zheng, Angie

Institution: *UT - University of Utah*

Discipline: Political Science

Author/Contributors:
Angie Zheng

Abstract Name: **The Hobbesian Assumptions behind Mearsheimer's Offensive Realism and Notion of Hegemony**

Contemporary political thought is more heavily shaped by its predecessors than is usually recognized. This research investigates how Thomas Hobbes, a 17th-century political theorist, continues to influence our contemporary "realist" interpretations of global dynamics. The project explores how Hobbes' work has shaped that of John Mearsheimer, a prominent neoliberal International Relations scholar known for his theory of "offensive realism." The research asks: How does a Hobbesian understanding of the state of nature inform contemporary theories of political realism within international relations? More specifically, what Hobbesian assumptions shape John Mearsheimer's understanding of hegemony, and how does this purport to predict "great power politics" within international relations? This researchwill also address Mearsheimer's account of China's rise to power to illustrate the implications of a Hobbesian framework in the present.

Zheng, Elisa

Institution: *BRA - Oswaldo Cruz Foundation*

Discipline: Business

Author/Contributors:
Elisa Zheng,
Daniel Gulanowski

Abstract Name: **The Role of Guanxi on Knowledge Sharing Online: A Systematic Review**

In China, guanxi is the foundation of all social relationships and it is characterized by multiple elements which facilitate interpersonal relationships, such as face (mianzi), reciprocity (huibao), and trust (xinren). Research established that guanxi can enable greater knowledge sharing in typical face-to-face interactions. However, our understanding of the role of guanxi and its elements on knowledge sharing online is limited. Considering the increasing uses of digital technologies for communication and knowledge sharing (KS) and the growing importance of Chinese enterprises, a better understanding of the role of guanxi and its elements on online knowledge sharing is of critical importance. Thus, this paper reviews relevant studies published between 2010-2022 to synthesize the extant research on knowledge sharing online under guanxi systems. Our findings suggest that although recent studies have begun to conceptualize online KS frameworks while considering the effects of guanxi, the majority of studies use existing Western theories such as the social capital theory and the social cognitive theory to interpret what variables induce KS in Chinese populations. Furthermore, while guanxi dimensions like reciprocity and trust have been frequently the subject of study in existing literature, the manner in which it impacts KS outcomes and attitudes largely depends on the type of online platform being used and the role of the user. Currently, literature on the role of mianzi and ganqing on KS online is scarce, with conflicting findings regarding the effects of these dimensions on knowledge sharing behaviour (KSB). In this paper, we also identify research gaps and propose directions for future research.

Zheng, Jon

Institution: *WI - University of Wisconsin-Whitewater*

Discipline: Biology

Author/Contributors:
Jeton Dehari,
Jon Zheng

Abstract Name: **Phylogenetic Diversification of Monkeypox and Related Poxviridae**

Monkeypox (hereinafter MPXV) is a zoonotic virus that is localized in Western and Central Africa but has recently spread to 82 non-endemic countries with roughly 66,000 cases worldwide, as of September, 2022 (CDC.org). MPXV can enter the body via the oral or skin routes. MPXV mainly targets the airway epithelium leading to infection of nearby immune cells. For the skin route, the virus first infects keratinocytes and fibroblasts. Similarly, to the oral route, MPXV thereafter infects nearby immune cells, such as dendritic cells, and macrophages. In both cases, the infected immune cells allow MPXV to gain access to a draining lymph node. It is hypothesized that an infected draining lymph node subsequently becomes a site of MPXV virion dissemination. The WHO declared MPXV an international health emergency in July of this year (aha.org) and advised caution regarding travel to countries with rising caseloads. As a virus of the Orthopoxvirus genus, which contains the Vaccinia virus that causes smallpox disease, MPXV has a similar double-stranded DNA genome, life cycle, and mode of transmission. Double-stranded DNA (ds DNA) genomes are generally associated with lower mutation rates. In contrast, the current outbreak exhibits an unexpectedly high level of mutations,roughly 6 times the typical rate for ds viral DNA. To pinpoint the evolutionary origins of this elevated mutation rate, we will: (1) reconstruct phylogenetic relationships among MPXV and its relatives in the Poxviridae, using MrBayes; (2) calibrate a penalized-likelihood molecular clock, using BEAST, to estimate divergence times within the clade; (3) compare rates of molecular evolution for selected proteins among Poxviridae sub-lineages, using Mesquite; and (4) model patterns of structural evolution in viral proteins using PyMol. These results have the potential to shed light on the underlying causes of shifts inprotein evolution rates and the shifting dynamics interactions with host immune systems.

Zheng, Yuqi

Institution: *NY - Colgate University*

Discipline: Education

Author/Contributors:
Angela Zheng

Abstract Name: GLOBAL CITIZENSHIP DEVELOPMENT IN SECONDARY SCHOOLS: A CASE STUDY OF THE UNITED STATES

Global Competence, a key concept raised by United Nations in Global Citizenship Education (GCE), emphasizes the development of critically knowledgeable and skillful individuals who can understand and appreciate different cultures. The present research investigated American secondary schools' performance in implementing the GCE theory. Specifically, I looked into how high schools help students develop a global perspective through social studies classes, world language classes, and extracurricular programs. Using interview protocols based on a synthesis of the Global Competence theoretical frameworks raised by the Asia Society, UNESCO, and OECD, I interviewed 14 current Colgate students and alums: 7 Caucasian American students, 5 international students, 1 Mexican American student, and 1 African American student.The research yields mainly three types of students' attitudes toward their high schools' performance in Global Competent development: (1) schools took students' global development seriously and were effective in developing them into global citizens, (2) schools did not take students' global development seriously and should be improved, and (3) while schools did not prioritize global development a priority they should not be blamed. The research also revealed 3 pragmatic tensions exist in American high schools hindering GCE's effective implementation: (1) conservative religious/political environments hinder critical thinking development, (2) low diversity hinders effective intercultural communication, and (3) priority in academic performance hinders in-class global/multicultural education.To alleviate the tensions mentioned above, schools can encourage teachers (especially world language teachers) to bring critical global ideas into classes. Teachers can intentionally create open classroom spaces to allow students who might be more globally knowledgeable than teachers to initiate meaningful discussions. Finally, schools can try to mix day (mostly local students) and boarding students (mostly international students) to promote intercultural communication.

Zhu, Amanda

Institution: *AZ - Embry-Riddle Aeronautical University*

Discipline: Engineering/Applied Sciences

Author/Contributors:
Amanda Zhu,
Natalie Dow

Abstract Name: Understanding an Engineer's Brain: Developing Problem Solving and Intuition

Ever wonder how intuition affects individual problem-solving skills? Does getting an A in a class correlate to an increase in intuition in that subject? As technology-aided problem-solvingincreases, it is critical for engineering students to develop the necessary skills to predict and analyze solution outcomes, which we call engineering intuition. Intuition has been previously studied in nursing, business management, and law, and is a key component in the development of expertise. To increase how intuition is taught in classrooms, we need to first understand how intuition is used in problem-solving and then develop a method to measure it.With the goal of measuring intuition, we analyzed results from a survey with two statics inventory concept questions based on the Concept Assessment Tool for Statics (CATS) (Steif; Dantzler, 2005). The first question focused on assessing a problem outcome as a sensibility check and the second question focused on predicting the outcome. In addition to solving the concept questions, participants were asked questions based on their confidence in the answer, how they answered the question, the likelihood of taking additional steps to justify their answer, and the likelihood of going to a manager with just the answer. We analyzed open-ended responses from 271 participants and identified emergent themes across the responses. We used these themes to create a codebook that was applied to all open-ended responses. The resultant coding showed the correlation between the open-ended questions and qualitative analysis of the multiple-choice questions, confirming that the questions were answered in similar ways. Efforts are ongoing to determine how well the survey measured intuition, but we believe this survey is the first step to encourage intuition use in the classroom.

Zhu, Haoran

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Economics

Author/Contributors:
Andrew Lindaas *Grace McLean* *Clare Palen*
Haoran Zhu

Abstract Name: **Using Survey Data to Report on Low-Income Household Experiences Shopping at the Eau Claire Downtown Farmers? Market**

Food insecurity is a significant issue facing many American households. The Supplemental Nutrition Assistance Program (SNAP) provides increased access to food for families in need. Additionally, fruit and vegetable (FV) consumption has been shown to improve health and reduce the risk of a variety of chronic diseases. However, poor nutrition among children and adults, including low FV intake have contributed to rising rates of obesity among US children which have been shown to persist into adulthood. It is particularly challenging for low-income households to purchase/eat the recommended amount of FV. Farmers' markets offer a wide variety of fresh, local and healthy foods, especially FV, but data show that low-income households are much less likely to shop at farmers' markets. The Eau Claire Downtown Farmers' Market (ECDFM) sponsors a Market Match Program (MMP) incentivizing SNAP households to shop at the market. Administrative data on program utilization suggests that most SNAP households shop at the ECDFM using the MMP relatively infrequently. This poster presents data from surveys of SNAP shoppers at the ECDFM in 2022 (N=349) to learn more about their experiences using the program including what limits their shopping at the market and what might increase their ability to shop at the market. Our results indicate that the most significant limitations to shopping at the ECDFM were the market location/hours, SNAP benefits running out and just not remembering. Correspondingly, the most mentioned things that would encourage more frequent shopping at the ECDFM were expanded market locations/hours, a larger match amount and also being reminded. Among our other key findings are that the ECDFM MMP provides many benefits including reducing food insecurity among EC SNAP households. This poster is connected to another submitted poster analyzing a variety of administrative data from recorded transactions of SNAP shoppers using the ECDFM MMP.

Zhu, Yanze

Institution: *AZ - Northern Arizona University*

Discipline: English/Linguistics

Author/Contributors:
Yanze Zhu

Abstract Name: **How Horror Movies Reflect Political and Cultural Anxieties**

In the late 20th century, Japan, China and the United States all produced many horror films that reflected the cultural and political anxieties of their time, such as the fear of invasion by outsiders, concerns about government mismanagement and technological advances, and the fear of unknown creatures. These universal world anxieties stem from the trauma of World War II, the economic crisis and rapid developments in technology. At the same time, horror films from different countries also show some unique anxieties that arise from different social contexts. For China, the revolt against the ideology of feudalism's residuals was a major theme of late twentieth century movies. Feudalism has a history of over 2,000 years in China, so it has left an indelible, damaging impact on the country. During this period, ghosts often played the role of kindness and bravery in Chinese films because they are not required to follow the rules of feudalism. Directors use ghosts instead of humans to break the shackles of society. In Japan, the fear of nuclear weapons and nuclear war gave birth to the classic monster movie. The Japanese used the image of giant monsters to represent nuclear weapons with their terrible power and nuclear radiation, and used these monsters destroying cities as a metaphor for the devastation of nuclear power in Japan. In the United States, the number of serial killers began to grow in the 1960s and peaked in the 1980s. A fear of serial killers implies a concern for individual safety felt at a societal level, which is reflected in the large number of slasher movies in the 1980s. According to this project, the inside values of horror films can be explored. These values demonstrate that horror films are not just for entertainment, but that they present serious social issues.

Zhuang, Athena

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Communication/Journalism

Author/Contributors:
Muzammil Hussain, *Ulysses O'Donnell*, *Zainab Mustafa*, *Athena Zhuang*, *Eshan Kapoor*, *Matteo Pettinato*, *Himari Tamura*, *Rafiqul Islam*

Abstract Name: **Mapping institutional cultures in global high-tech R&D institutions**

This study analyzes organizational cultures across global elite R&D institutions (n = 455). We identity and examine inter-institutional differences across mission, vision, and values (MVV) to predict effects on institutional performance and caliber. Meta-data is also aggregated via such rankings, institutions' research productivity, results, and effective integration of information and communication technologies (ICTs). By understanding strategic differences as expressed in MVVs, this project determines ways in which strategic planning collateral may affect aggregate organizational performance. Furthermore, the study evaluates institutions' research methodology and efforts on a global scale, looking at how different organizations organize data, present findings, and take action based on their results.It is anticipated that institutions with a focus on data diversity, meaning a broad range of ongoing projects, will also have diversity-based MVVs. Notably, we test the hypothesis that institutions which value diversity and inclusion–whether cultural, intellectual, etc–may produce the top-most quality of research execution and analysis. This, as a result, classifies some research institutions as more productive than others and are often seen as leaders in particular fields and have large growth potential. This is commonly demonstrated in their university rankings, thus affecting how many students apply for the college, what these students study once enrolled, and the research these students produce. As a result of these institutions' successes, they are likely to receive higher amounts of funding and therefore yield more research in the future. MVVs are critical in determining what values universities follow and, in many cases, depict why certain projects are undertaken and how they will be executed.

Ziebell, Mark

Institution: *MI - University of Michigan - Ann Arbor*

Discipline: Biology

Author/Contributors:
Mark Ziebell,
Charlotte Probst,
Brian Weeks

Abstract Name: **Validating a Method for Rapid Handling and Measuring of Museum Specimens**

Large functional trait datasets provide the basis for many studies of avian morphology. However, collecting these data by hand is extremely time consuming. One approach to generating the large scale datasets necessary to scale up the spatial and temporal scales of avian research is to generate methods for quickly and easily accessing data from thousands of museum specimens. To do this, machine learning methods are being developed, however their accuracy remains poorly quantified. We address this problem by testing the accuracy of 'Skelevision', a method developed for rapidly handling, photographing, and measuring museum specimens using computer vision. Skelevision generated accurate functional trait estimates for the entirety of the University of Michigan Museum of Zoology's collection of passerine specimens. Here we assess the accuracy of Skelevision when used to measure specimens in a new Museum setting (the Field Museum of Natural History) by comparing Skelevision-generated and hand-made measurements. This method allows us to test whether Skelevision estimates are accurate regardless of the environment in which images were captured. Using machine learning to generate functional traits in ecology and evolution holds great promise, but also has unique challenges. Our work tests whether this class of approaches can be applied outside of the systems in which they are developed, a key feature to their broad utility in ecology and evolution.

Ziegler, Katie

Institution: *MN - Hamline University*

Discipline: **Biochemistry/Molecular Biology**

Author/Contributors:
Katie Ziegler,
Besty Martinez-Vaz

Abstract Name: **Investigating Fluoride Tolerance and Gene Expression of crcB in Pseudomonas putida F1**

Fluorinated compounds are increasingly being utilized for pharmaceutical, commercial and industrial products, leading to an increasing presence in the environment. Carbon-fluorine bonds are anthropogenic and rarely found in nature, as a result there are no known natural pathways that have evolved to easily degrade these compounds. Fluoride anions are toxic to living organisms, impairing necessary cellular activity such as metabolism, ATP synthesis, and important enzyme functions. Previous studies showed that Pseudomonas putida F1 can degrade fluorinated compounds. The purpose of this study was to investigate the fluoride tolerance of this organism and its relationship to the expression of crcB gene, which encodes a fluoride exporter protein. Tolerance experiments were carried out by measuring microbial growth at various concentrations ofNaF after 20 hours of incubation. Total RNA was extracted from each culture, converted to cDNA, amplified, and quantified using qRT-PCR. Results from the tolerance experiment show Pseudomonas putida F1 had tolerance to NaF up to a concentration of 125mM and 200mM in rich and minimal medium respectively. Growth experiments showed that P. putida F1 had similar generation times at lower concentrations and longer generation times at higher concentrations. Overnight incubation with 20mM NaF decreased the generation times of the cells grown with 50-125 mM NaF. The reduction in generation time is probably due to induction of the crcB gene through a fluoride response riboswitch, which upon recognition activates fluoride exporter genes, such as crcB. We expected the bacterial cultures subjected to high concentrations of fluoride to express the gene crcB at higher levels than lower concentrations. The qRT-PCR analyses did not show a trend of crcB expression in response to different concentrations of fluoride. The substantial level of variability between the experimental and control groups indicate that the crcB qRT-PCR assay needs to be optimized and repeated.

Ziegler, Michael

Institution: *WI - Chippewa Valley Technical College*

Discipline: **Psychology/Neuroscience**

Author/Contributors:
Joe Berg,
Adrienne Leuck,
Kaitlin Peterson,
Kimberly Sanchez,
Madeline Wood,
Michael Ziegler

Abstract Name: **Smartphone Use on Well Being**

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphone use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitive, and social well-being of individuals across the generations. Previous research tendedto focus on one aspect or another of well-being, for example sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are impacted by Smartphone use.

Ziemyte, Gabija

Institution: *KY - University of Kentucky*

Discipline: Physics/Astronomy

Author/Contributors:
Gabija Ziemyte

Abstract Name: **Development of Electromagnetic Coils for UCN Polarization in nEDM Experiments**

Discovering the neutron electric dipole moment (nEDM) poses a significant goal in nuclear and particle astrophysics. An observed nonzero nEDM would provide evidence for both parity (P) violation and time reversal invariance (T) violation. This breaking of symmetry is required to explain the prevalence of matter over antimatter, and would be evidence for new laws beyond the Standard Model of particle physics. Variations in the precession frequency of the neutron spin, caused by reaction with ultracold polarized atoms in the uniform field of electromagnetic coils, will be used to measure the nEDM. However, measuring the nEDM proves difficult due to the hypersensitivity of neutrons to magnetic fields. Any changes in the uniformity of the generated field could mimic the signal for an nEDM. Therefore, designing electromagnetic coils with extremely uniform magnetic fields is essential for this experiment. The coils I would help to design would increase the sensitivity of the experiment to an unprecedented sensitivity of 10-28 e cm. I will be solving for boundary conditions for the magnetic scalar potential on a coil to be used at an experiment conducted at the Paul Scherrer Institut (PSI). By solving for the boundary conditions, equipotential contours can be constructed, which give the location of wire windings for the coil. The placement of the wire windings based on the geometry of the coil and the material used for it creates the uniform magnetic fields within the coil. This project will consist of development of the PSI coil by solving partial differential equations, printing test coils, mapping the fields, and editing the design.

Ziman, Roxanne

Institution: *IA - Iowa State University*

Discipline: FAN Abstract

Author/Contributors:
Roxanne Ziman

Abstract Name: **Not just a pretty picture: evaluating the efficacy of new visual aids in undergraduate science education**

Scientific visual communication is a unique interdisciplinary field that integrates the visual arts–from traditional and digital illustration to 3D modeling and animation, and more–to communicate and teach topics in health and sciences. With the increasing availability of new media technologies such as 3D printing and VR/AR in the classroom, new forms of visual aids will supplement the standard learning materials and will play an important role in the classroom experience and learning outcomes for undergraduate science students. Students training in the field of scientific visualization are engaged in the creative design process to develop new visual aids,but often stop short of evaluating their utility and measured impact on learning outcomes. Research on newly developed scientific visual media has historically been limited or lacking; this is true at the undergraduate level as well as in graduate-level training in science visual communication and in industry. There is therefore a need within this field to encourage early engagement in research, ideally starting at the undergraduate level, to promote academic scholarship and investigation into evidence-based best practices for designing new scientific visual media to improve undergraduate science education. Following themes 3 and 4 for this year's FAN conference, this session will present on efforts in the Biological/Pre-Medical Illustration Major at Iowa State University to engage undergraduate students in research that evaluates the utility and efficacy of new visual learning aids on learning outcomes for science students. Whether by implementing design thinking methods into course projects or developing research studies for creative capstone projects, students go beyond thinking of the visual media developed in their coursework as mere end products to seeing them as a means to study how people learn and to understand how visual information can be best presented to improve learning.

Zimmerman, Elianna

Institution: *WI - University of Wisconsin-Eau Claire*

Discipline: Communication/Journalism

Author/Contributors:
Megan Schmitz,
Julia Karls,
Brandon Kviz,
Elianna Zimmerman,
Maia Latvala

Abstract Name: **"I get physically ill when I think about us?: Making sense of memorable breakup messages**

All relationships have a beginning; some have an end. The experiences we have as we disengage from relationships influence our understanding of those relationships. To better understand the memorable messages that individuals received during romantic relationship breakups, we sought to answer the following questions: What is the significance of memorable breakups? Which words or phrases are consistently remembered during a breakup? Do memorable messages usually come from the person breaking up or the person being broken up with? To answer these questions, the research team conducted 16 semi-structured interviews; participants were recruited via convenience sampling. Thematic analysis techniques (Nowell, Norris, White; Moules, 2017) were used to identify the following themes: Many of the reasons for a breakup appealed to an individual's desire for independence as they looked toward the future. Many memorable breakups also had connections with an individual's family or friends' disapproval of the relationship. In general, negative or harmful relationships yielded negative breakup memories while healthy relationships usually yielded more positive or mutual disengagement conversations. As participants reflected on a memorable breakup and pondered future breakup communication they would execute, every individual mentioned something they learned from in their memorable breakup.

Zirbes, Carrie

Institution: *MN - St. Catherine University*

Discipline: Business

Author/Contributors:
Carrie Zirbes,
Jacqueline Parr

Abstract Name: **Transparency in the Apparel Global Supply Chain**

Practicing sustainable manufacturing principles is essential in the global supply chain, as it ensures workers' safety and well-being and limits pollution. Currently, a lack of transparency creates a disconnect between apparel brands and the manufacturers. Without a clear responsible party, pollution and carbon emissions are not accounted for, and factory workers receive unfair and dangerous treatment.
Transparency is necessary for a sustainable supply chain to ensure that all production follows the legal requirements regarding pollution and workers' rights. There is no legal obligation for manufacturers to have transparency resulting in the destruction of ecosystems and catastrophes such as the 2013 Rana Plaza collapse, resulting in the death of 1,134 workers. The current research aims to bridge the gaps in transparency within the apparel supply chain, identifying the weakest areas that need to be addressed to ensure sustainability in the future of global sourcing.
Through a review of the literature, we identified a connection between expansion and trade and the development of low-cost production, frequently through subcontracting to factories unknown by the vendors. However, the cost benefits of offshore production comes with the added challenge of ensuring environmental and social compliance from manufacturers.
To further explore this research question more, a content analysis was conducted using academic literature, government websites, and industry trade publications and websites. Common themes found in the literature were a disconnect between brand and subcontractor, competition between low-cost factories, noncompliance with legal regulations, and factory pollution destroying waterways and ecosystems. Through further research, these areas will be explored further to understand where gaps in the supply chain exist and what needs to be changed to establish a transparent and sustainable supply chain.

Zita, Robert

Institution: *IL - Elmhurst University*

Discipline: Psychology/Neuroscience

Author/Contributors:
Jeffrey Johnson,
Robert Zita,
Anthony Campolattara

Abstract Name: **A limit to the prosocial spending effect: Parents are not happier spending money on their children than themselves.**

The finding that spending money on others (vs. the self)—particularly close others—promotes happiness has been well established. However, no research has investigated whether this prosocial spending effect emerges for parents when spending on their children. Testing this question is important for both the prosocial spending and parental well-being literatures. In a separate study, we found preliminary support for the hypothesis that parents are happier after spending on a child than themselves, but the study was only correlational and had some sampling issues. Therefore, in the current research we conducted an online experiment in which parents (N= 228) were randomly assigned to recall and describe a memory in which they spent $20 onthemselves (personal spending), another person (prosocial spending), or on their child (child spending). After the manipulation they reported their positive emotions. Controlling for baseline positive emotions, parents were happier after reliving a time they spent money on someone else than themselves—the well-established prosocial spending effect. In contrast to our prediction, parents reported being similarly happy after reliving a time they spent money on themselves as in their children. As a stronger test of this hypothesis, future research should replicate this study with three improvements: 1) modify the writing prompt to focus on discretionary spending, 2) increase sample size, and 3) include a measure of inclusion of other in the self. Although prosocial spending is a strategy people can use to increase their well-being, it may not apply to parents spending on their children.

Zobitz, Emma

Institution: *MN - College of Saint Benedict/ Saint John's University*

Discipline: Biology

Author/Contributors:
Olivia Flack,
Emma Zobitz,
Kristina Timmerman

Abstract Name: **Prescribed Burn Effects on Animal Species in the St. John's Abbey Arboretum**

We investigated the impacts of prairie prescribed burns on small mammal diversity in the Saint John's Abbey Arboretum, Collegeville Minnesota. We hypothesized that there would be a correlation between burn age and degree of diversity. Based on this hypothesis, we predicted that older burns would have greater diversity. During June and July of 2022, we placed 18 traps on each of three different burn age plots (four, two and one years). Traps were placed 15 meters apart and were opened in the evening and checked early morning on the next day (H.B. Sherman live traps, model 3310A). Traps were baited with peanuts, oats, and raisins. Data collected for each trapped animal was plot name, trap ID, species, weight, gender, reproductive status, total body length and left hind leg length. Captured animals were released at their trapping site. A Chi-square goodness of fit was used to analyze data. Our mammal diversity among plots was not as expected – we trapped only house mice (Mus musculus). There was a difference in number of animals trapped on the three plots ($\chi 2$= 22.65, df = 2, p = 0.0001). More animals were trapped on the plot with a one-year burn. One factor that might contribute to trapping only one species is an extremely wet spring and summer. The ground was frequently saturated, and the vegetation density was hard for even us to walk through. We plan on continuing this study in 2023. We think that this research is important because today less than 1% of prairies remain in North America and are fragmented and scattered around.

Zolenski, Luke

Institution: *MD - Salisbury University*

Discipline: **Mathematics**

Author/Contributors:
Luke Zolenski

Abstract Name: **Creating... Creating...**

What does it mean to create something? Depending on who you ask, you will be met with very different answers. In Jean-Michelle Basquiat's case, it meant making a painting, in Roger Waters', writing songs, Marco Pierre White's, pushing culinary barriers. Nonetheless a pattern emerges when one analyzes the creative habits of the most famous artists throughout history: they all made something original. A trait that is becoming harder to come by as the modern age takes form, and creation gives way to bureaucracy. But what does the artist do? The artist creates,and new avenues for originality present themselves as they become more experienced. The artist - like the entrepreneur they are - recognizes a need in the market. And it is through constant immersion into their craft that these incredible powers of observation mature. The artist then looks to address this need; here is where their creative abilities serve them the most. Over the last few years, the current entertainment and creative mediums afforded to us have worn their welcome. As a result, the need for a new artistic medium has presented itself. The need for the next paradigm shift. As such, I have attempted to address this need by combining pre-existing realms of artistic expression, to produce an entirely new one. Further, this process is a direct result of computational and mathematical analysis, thus further integrating other disciplines. A new medium altogether; one that encapsulates mathematics and art – and within art, those realms of musical and dynamic expression. A bridge between those forms that are intangible with those that are defined. Total oneness as is attained mentally now exists literally and physically. Originality in it's truest sense, creating creating...

Zoll, Jacob

Institution: *PA - Allegheny College*

Discipline: **Chemistry/Materials Science**

Author/Contributors:
Jacob Zoll,
Moira Flanagan

Abstract Name: **Accessing Nanosecond Chemistry in a Undergraduate Research Lab**

Most chemical reactions occur on a timescale ranging from seconds to hours, the chemistry that occurs in the excited state occurs much faster, and some progress over the course of an attosecond. The past few decades have seensuch advances in femtosecond spectroscopy, allowing researchers to interrogate these ultrafast processes experimentally. However due to the price tag, at most liberal arts institutions, students are not able to observe reactions happening at such fast time scales. Transient Absorption or pump-probe spectroscopy is one of the straighter forward techniques in time-resolved spectroscopy and can interrogate time scales from milliseconds-femtoseconds.Using a sub-nanosecond pulsed laser, we build on the work of Farr et al to develop a home-built nanosecond pump-probe spectrometer that is easily accessible to undergraduate students to be used across all sub-disciplines of chemistry and related fields. To reduce costs, a passive Q-switched pulsed laser is used as the pump source, and a photodiode connected to a bench-top oscilloscope comprised the detector. We plan on first programming a user-friendly interface in LabVIEW that will allow for easy changing of parameters for multiple different possible reactions. We have also developed a plan on how to set up our optics for a user-friendly experience that does not have to be changed.

Zuck, Nick

Institution: ***WI - University of Wisconsin-Eau Claire***

Discipline: Music

Author/Contributors:
Tessa Ferry *Christina Westman* *Elise Williams*
Nick Zuck *Lauren Casey*

Abstract Name: Percussion Activities with Adaptations for DEI and Integration of National Music Standards

This presentation will showcase graphic adaptations created for the secure setting of a juvenile detention center housed inside a jail. Social-emotional learning applications and social justice standards were connected with national music standards for lesson plans integrating the adaptations. Due to interest of the students involved inside the detention center, Latin rhythms were chosen as a major focus area. Rhythmic patterns for claves and basic Latin idioms were chosen and paired with specific Latin songs. Because different students needed different types of adaptations, a composite template was developed to include cues of words, images, music notation on a staff, and adaptive notation with counting boxes integrated to depict the organizational structure of the rhythm. How to show special effects such as accents, tremolos, and brushing technique to add sound on the tabletop and on clothing will be demonstrated. Students in the juvenile detention center assisted in creating each layer of adaptations, performing them, and conducting them. Input provided from juveniles for how to best facilitate their successful responses will be shared. Latin styles reflected by properties of music included switching between major and minor chords frequently, triplet patterns in both accompaniment and melody lines, and offbeat accents were represented across different cultures. Examples will be performed while graphics are shown with audience invited to join in and participate. Rhythms included three-two Son, three-two Rhumba, Samba, Bossa Clave, Samba Clave, swing patterns, Tumba, and Merengue, with each of these rhythms being paired with one or more songs for the music lessons. Considerations for meeting the needs of everyone in the group when those needs are not the same will be explored. Hasty considerations based on jail precautions and the pandemic will be described. Charts to show connections for social justice, social-emotional learning, and national music standards will be presented.

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Abstract Name: Smartphone Use and Well-being

How has Smartphone use impacted the general well-being of people today? The Smartphone usage has certainly increased over the past generation. The use is so prevalent that nearly everyone from 9-99 has one. Questions regarding how this intense Smartphonne use is impacting the overall health and well-being of society has been discussed across many different aspects of research. This research intends to study how Smartphone use impacts the physical, psychological, cognitve and social well-being of individuals across the generations. Previous research tends to focus on one aspect or another of well-being, for exmaple sleep or academic performance (cognitive functioning) or anxiety (psychological functioning). The research is lacking when looking at the global health of an individual and its association with Smartphone use. Thisstudy will also examine the specific ways individuals are using the Smartphones as well as how much of their daily life is consumed by the use. A correlational analysis will be completed in the spring semester of 2023 to determine what factors are most impacted by Smartphone use.